FIG. 1

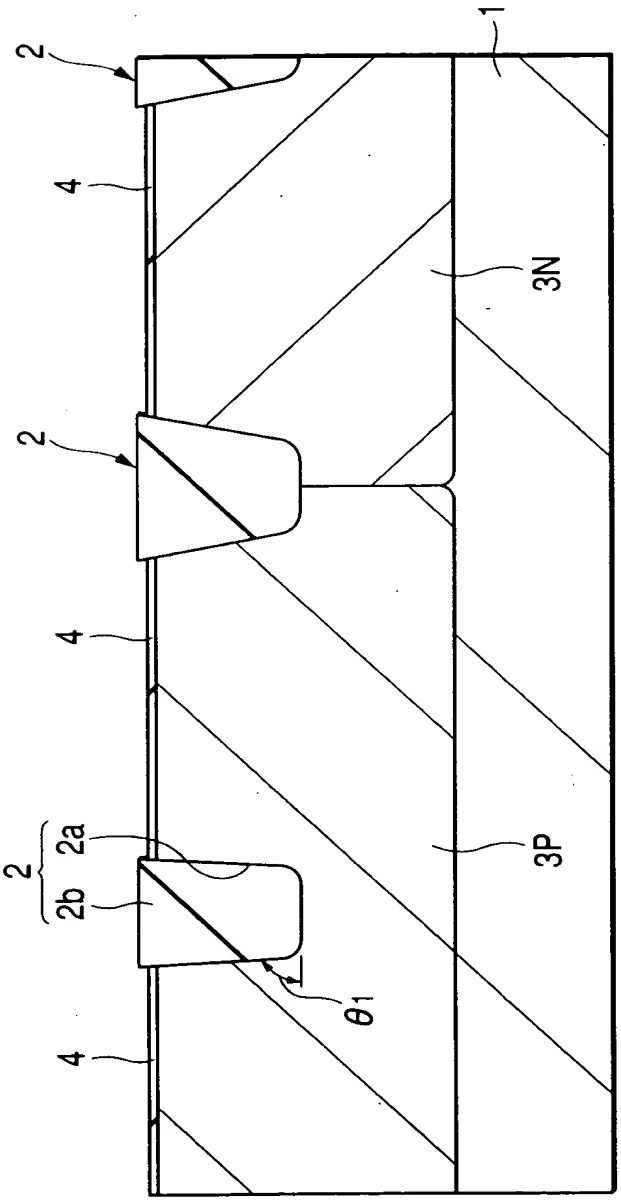


FIG. 2

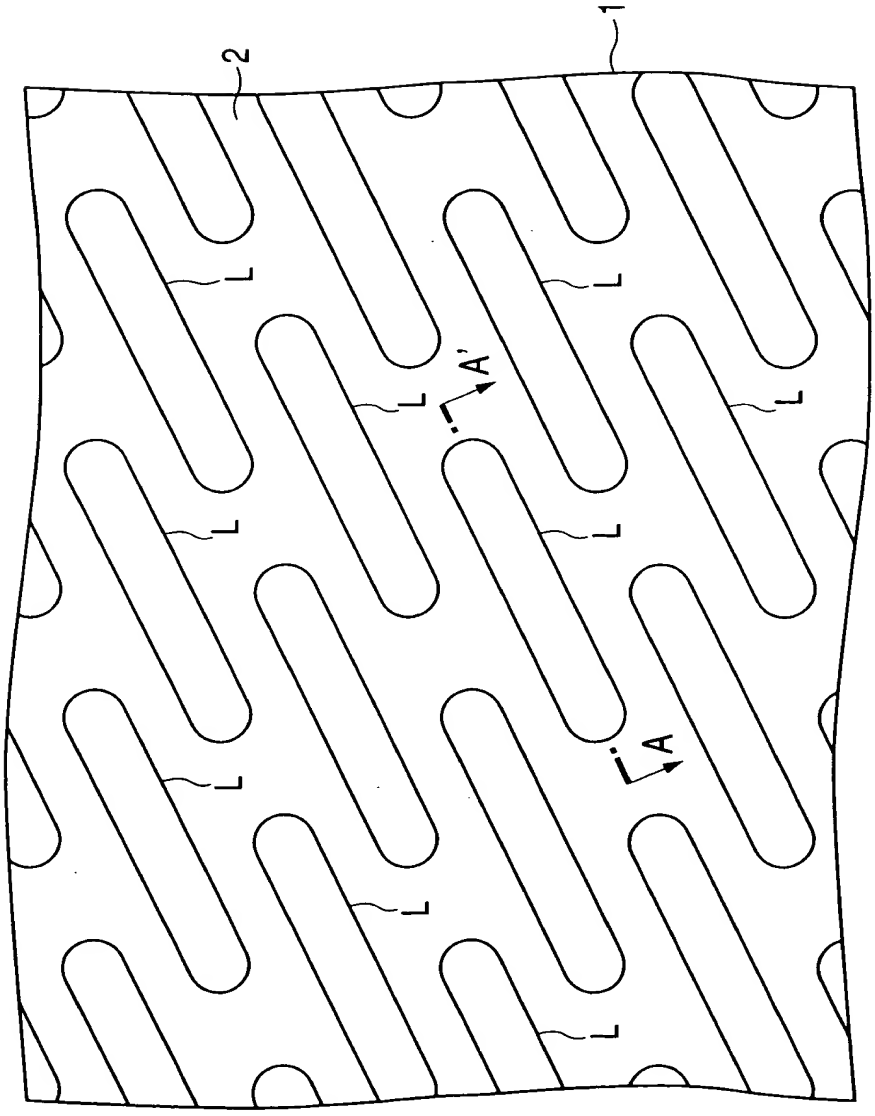


FIG. 3

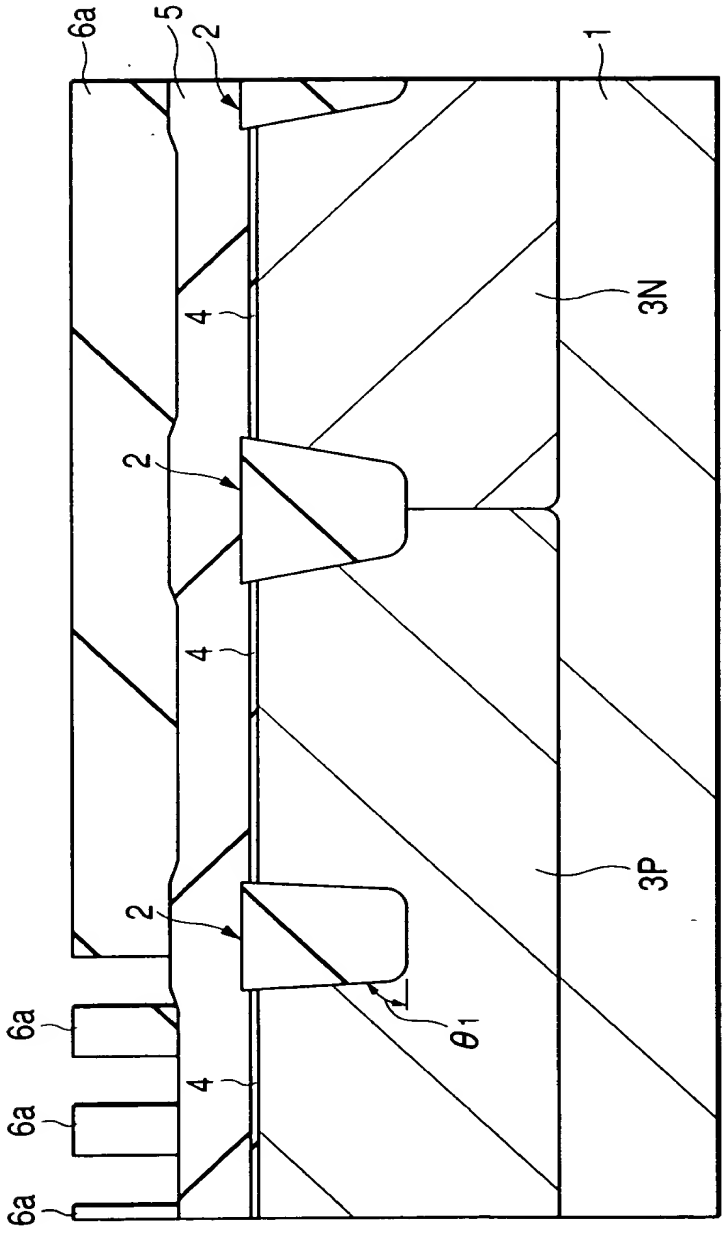


FIG. 4

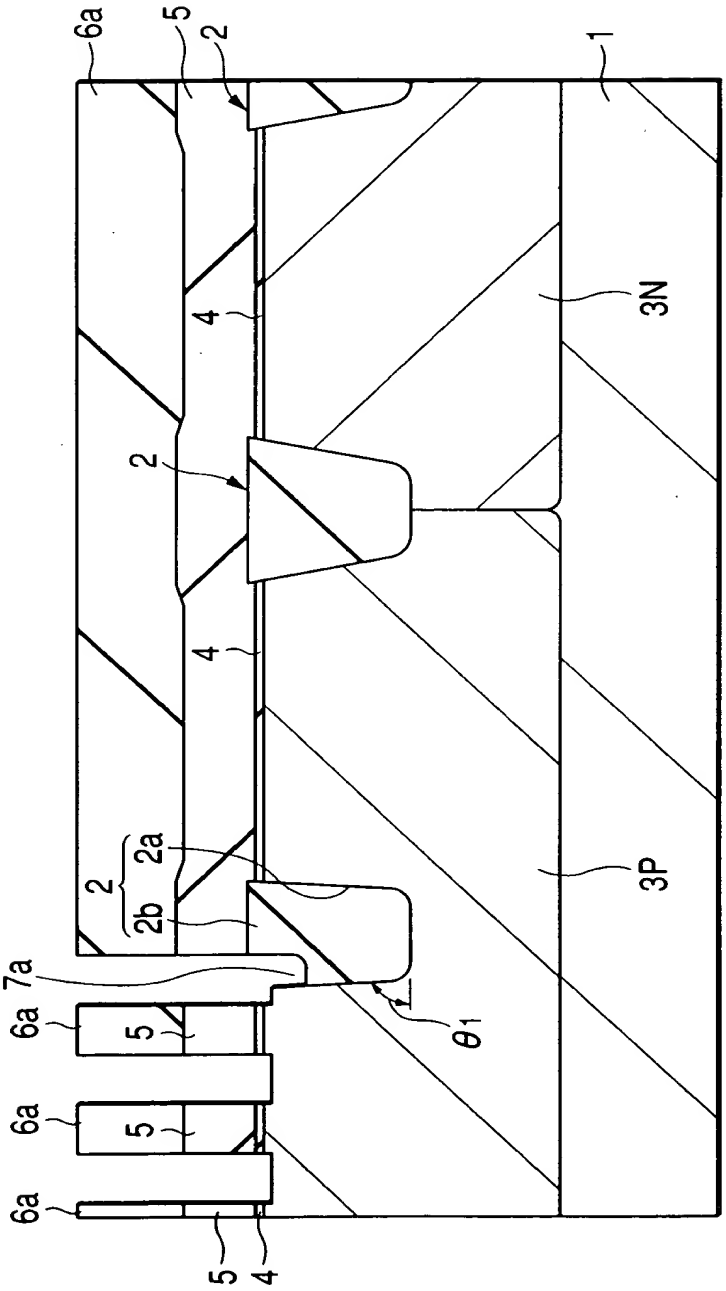


FIG. 5

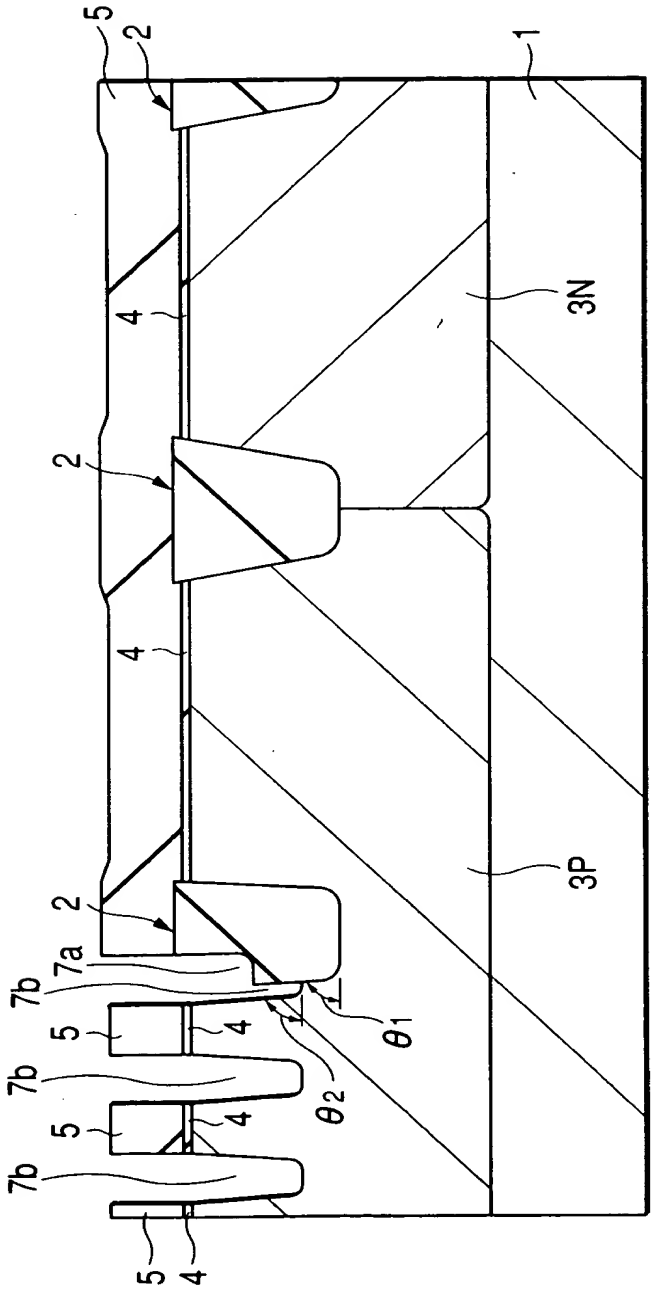


FIG. 6

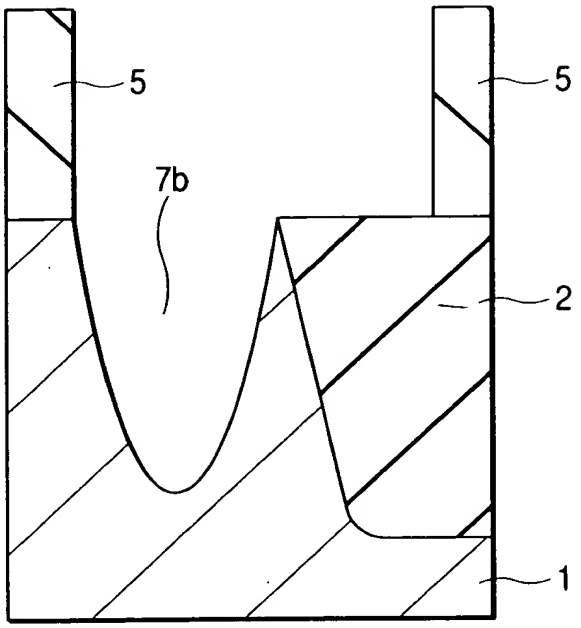


FIG. 7

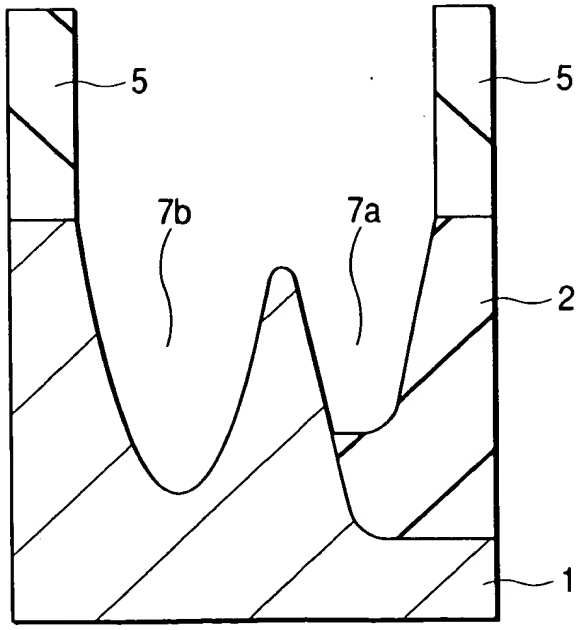


FIG. 8

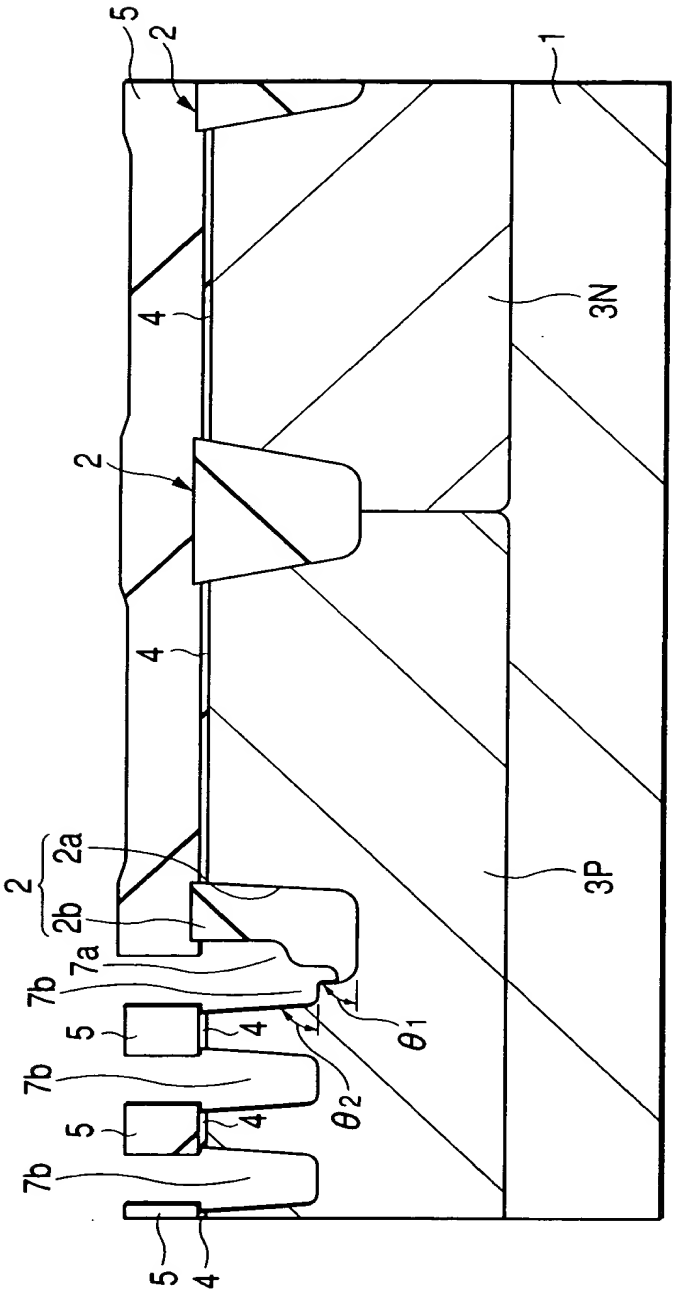


FIG. 9

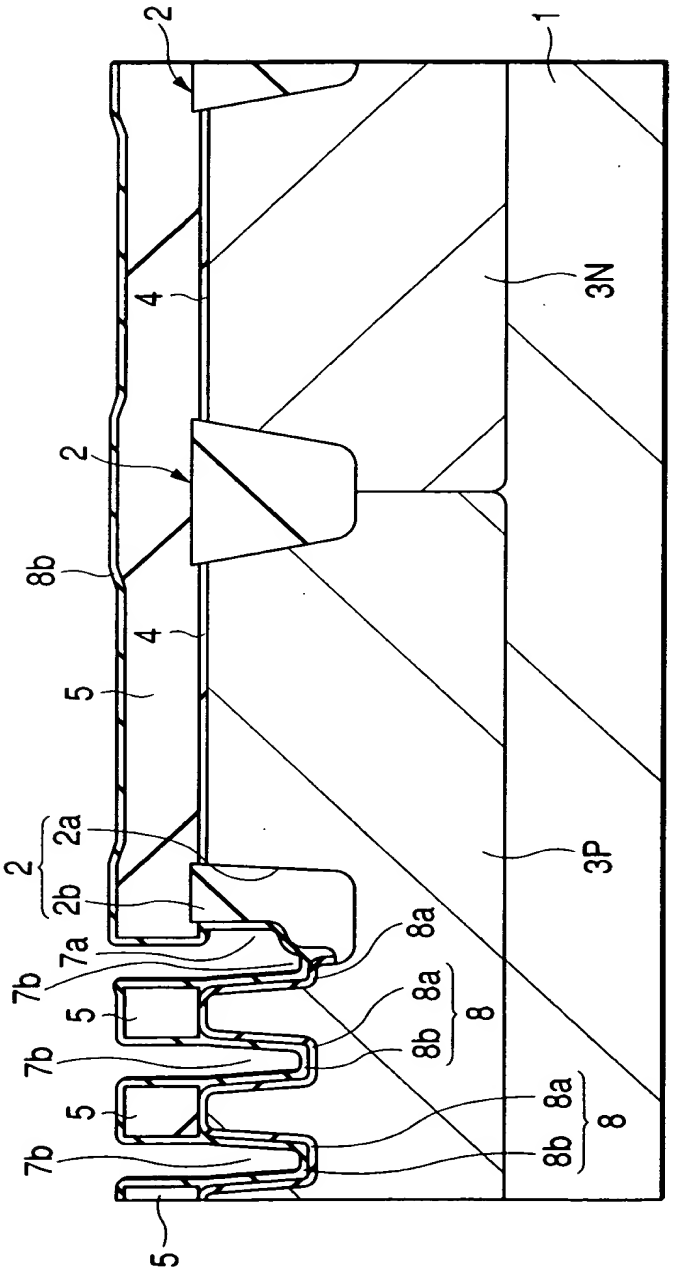


FIG. 10

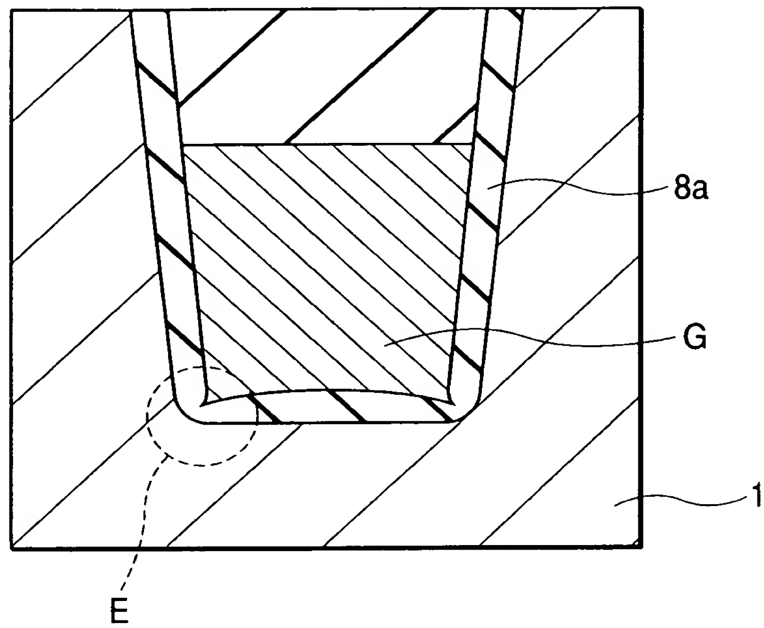


FIG. 11(a)

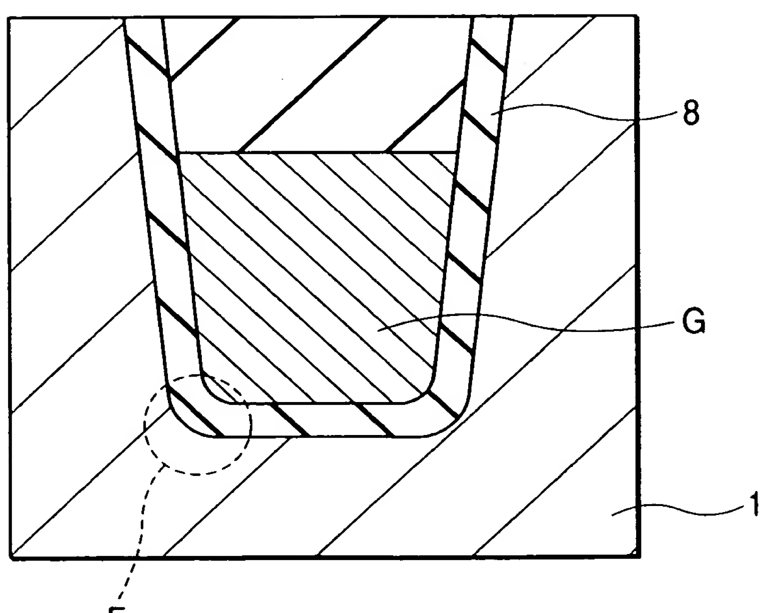


FIG. 11(b)

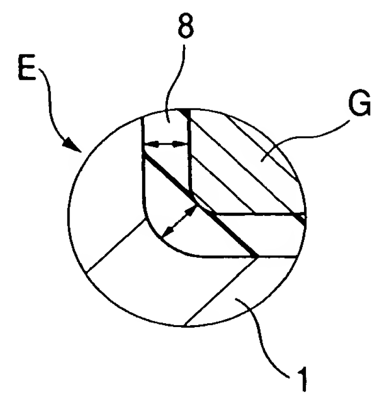


FIG. 12

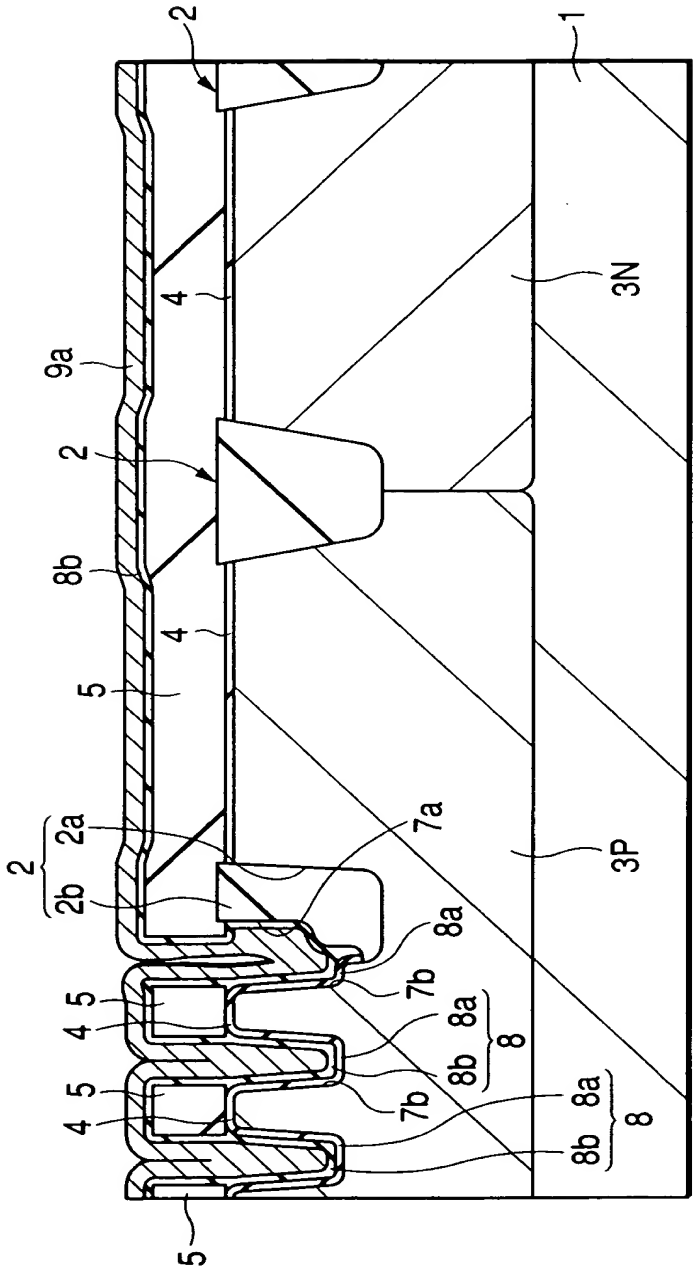


FIG. 13

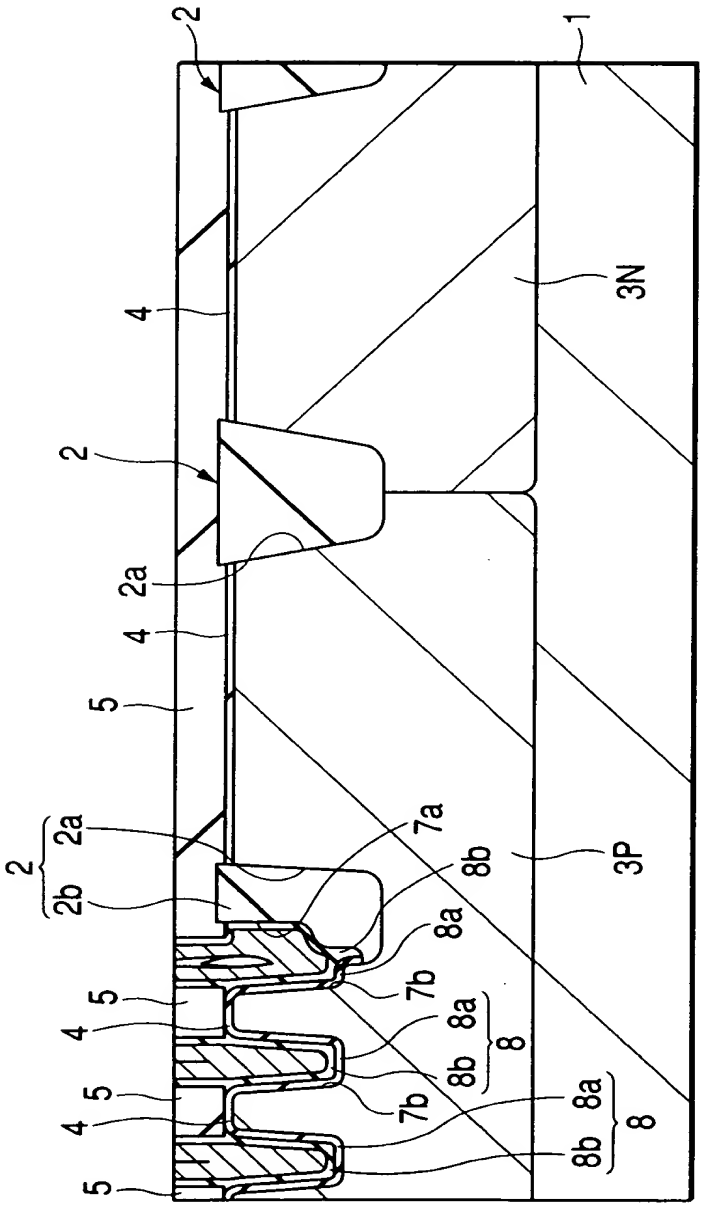


FIG. 14

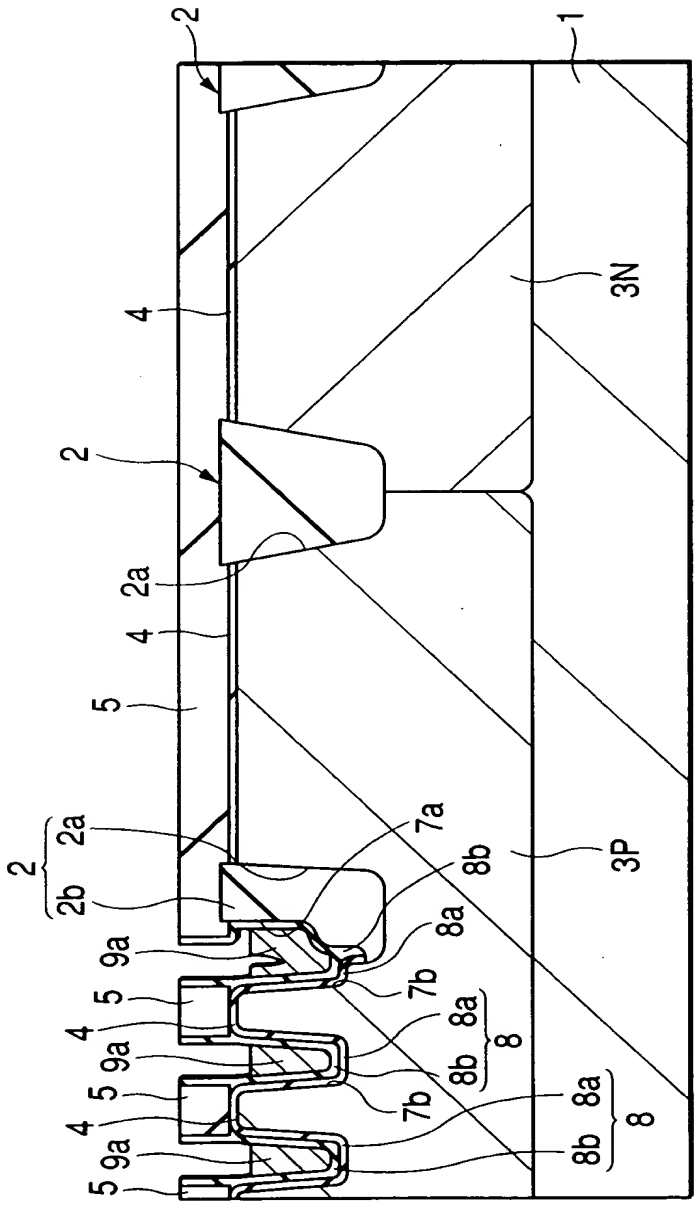


FIG. 15

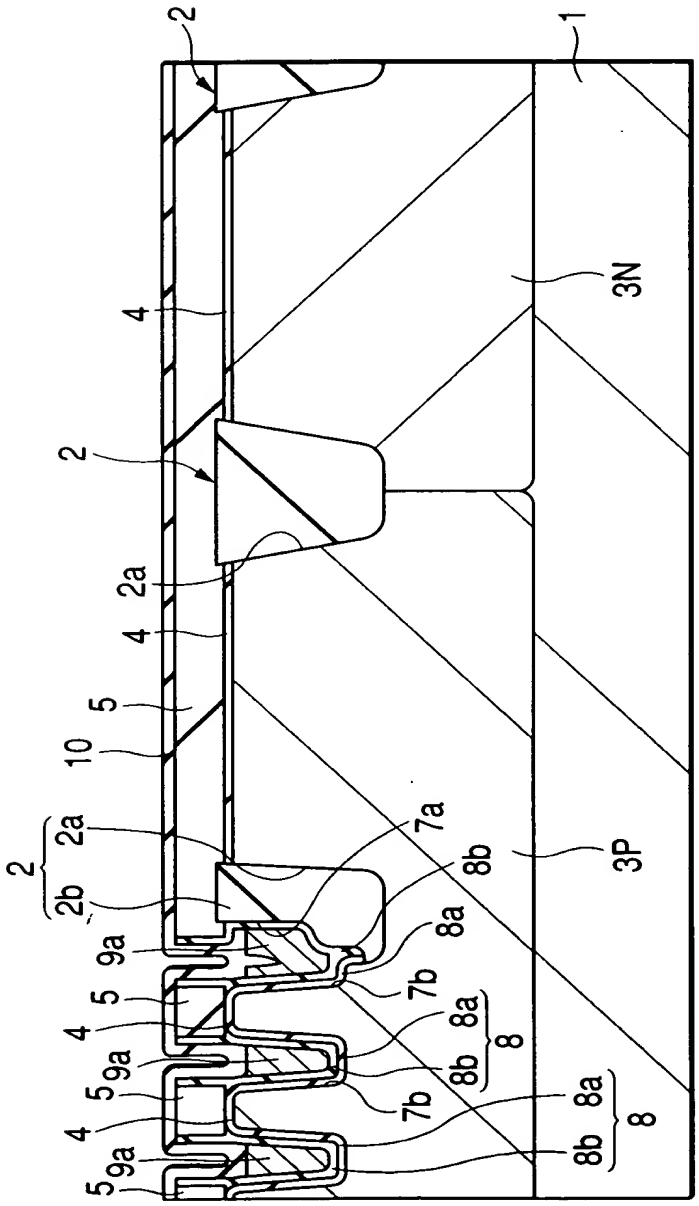

2
1
4
3N
2
2a
4
5
10
2
2a
2b
9a
5
4
9a
5
4
9a
5
7a
8b
3P
8a
7b
8a
8b
8
7b
8a
8b
8

FIG. 16

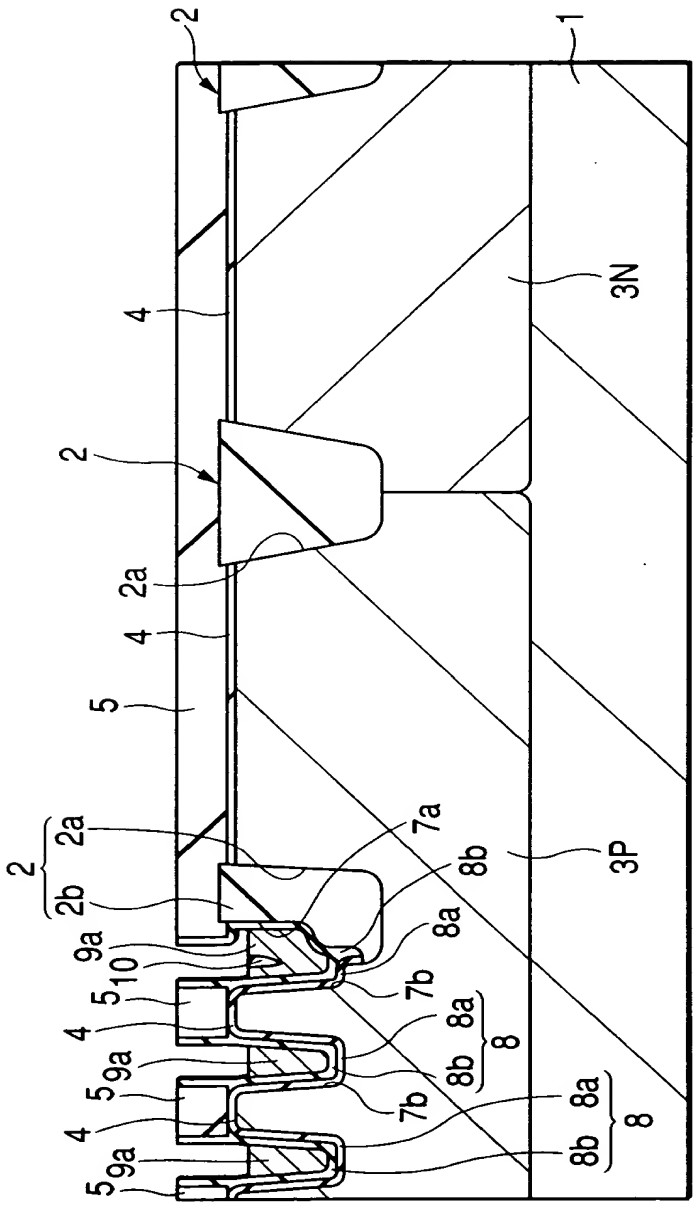

2
1
3N
4
2
2a
4
5
2
2a
2b
7a
8b
3P
9a
10
8a
7b
5
4
9a
8a
8b
8
5
4
9a
7b
8a
8b
8
5

FIG. 17

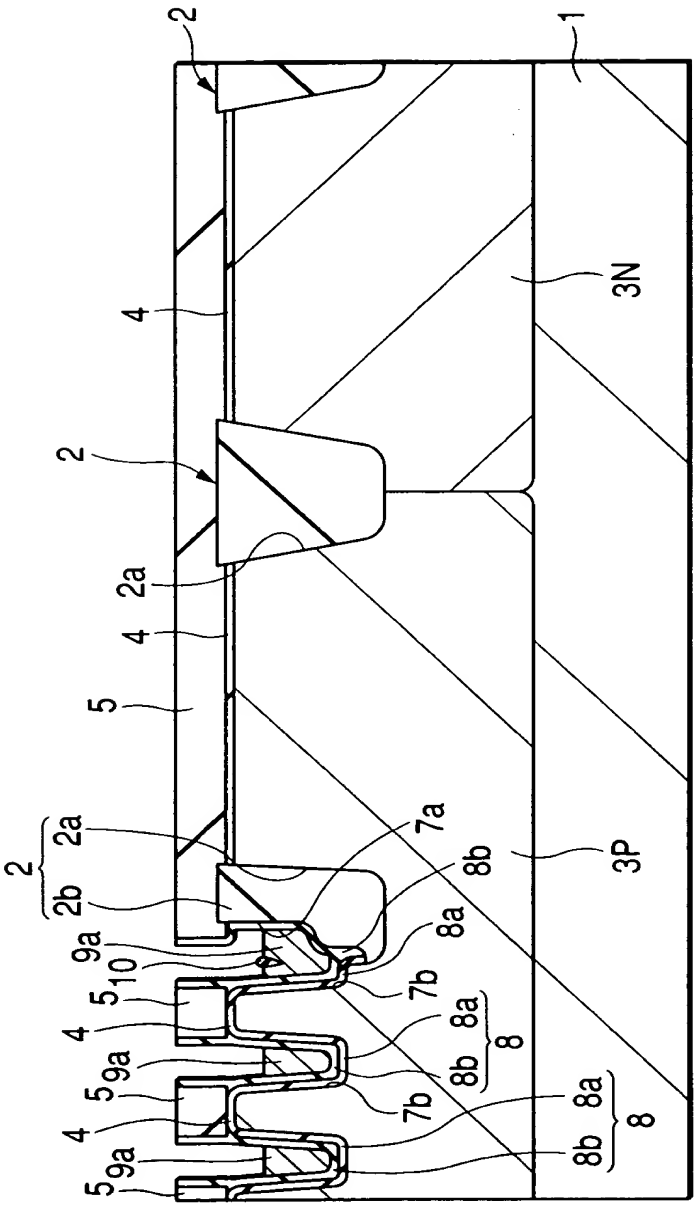

2
1
4
3N
2
2a
4
5
2
2a
2b
9a
10
5
4
5
9a
4
5
9a
7a
8b
3P
8a
7b
8a
8b
8
7b
8b
8a
8

FIG. 18

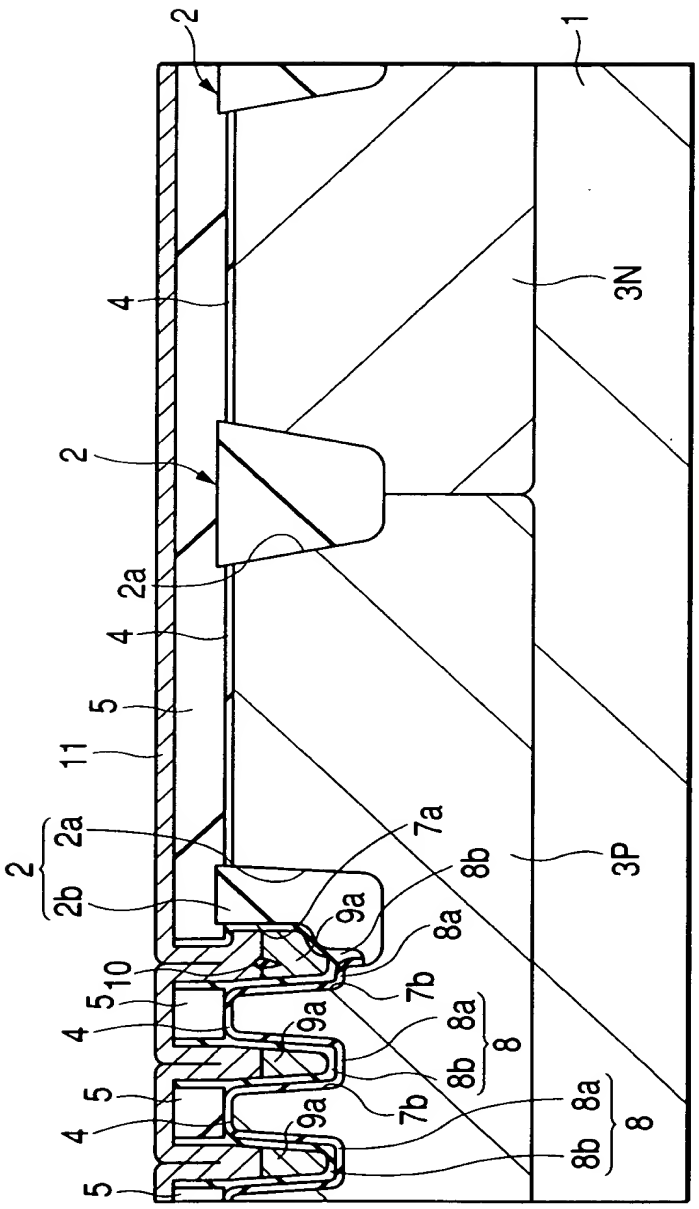

2
1
4
3N
2
2a
4
5
11
2
2a
2b
7a
8b
3P
9a
8a
10
5
7b
4
9a
8a
8
5
8b
4
9a
7b
8a
8
5
8b

FIG. 19

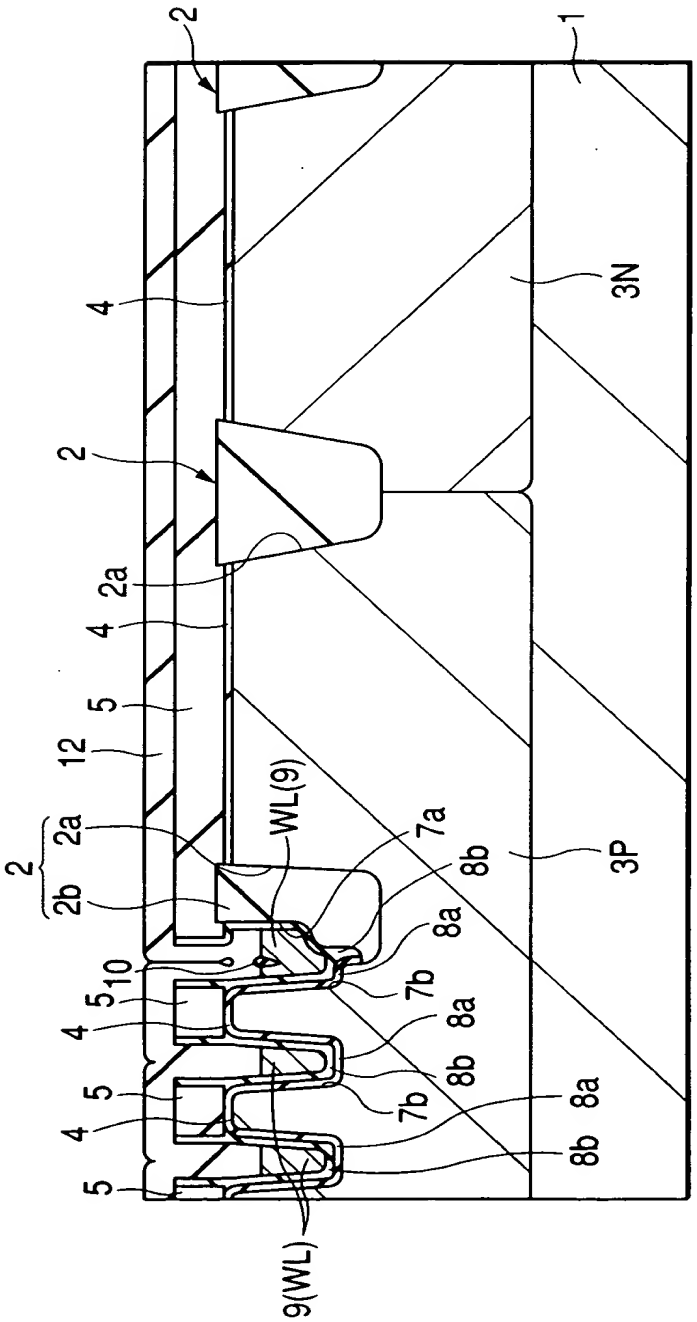

2
1
4
3N
2
2a
4
5
12
2
2a
2b
WL(9)
7a
8b
3P
8a
10
5
7b
4
8a
8b
5
7b
8a
4
8b
5
9(WL)

FIG. 20

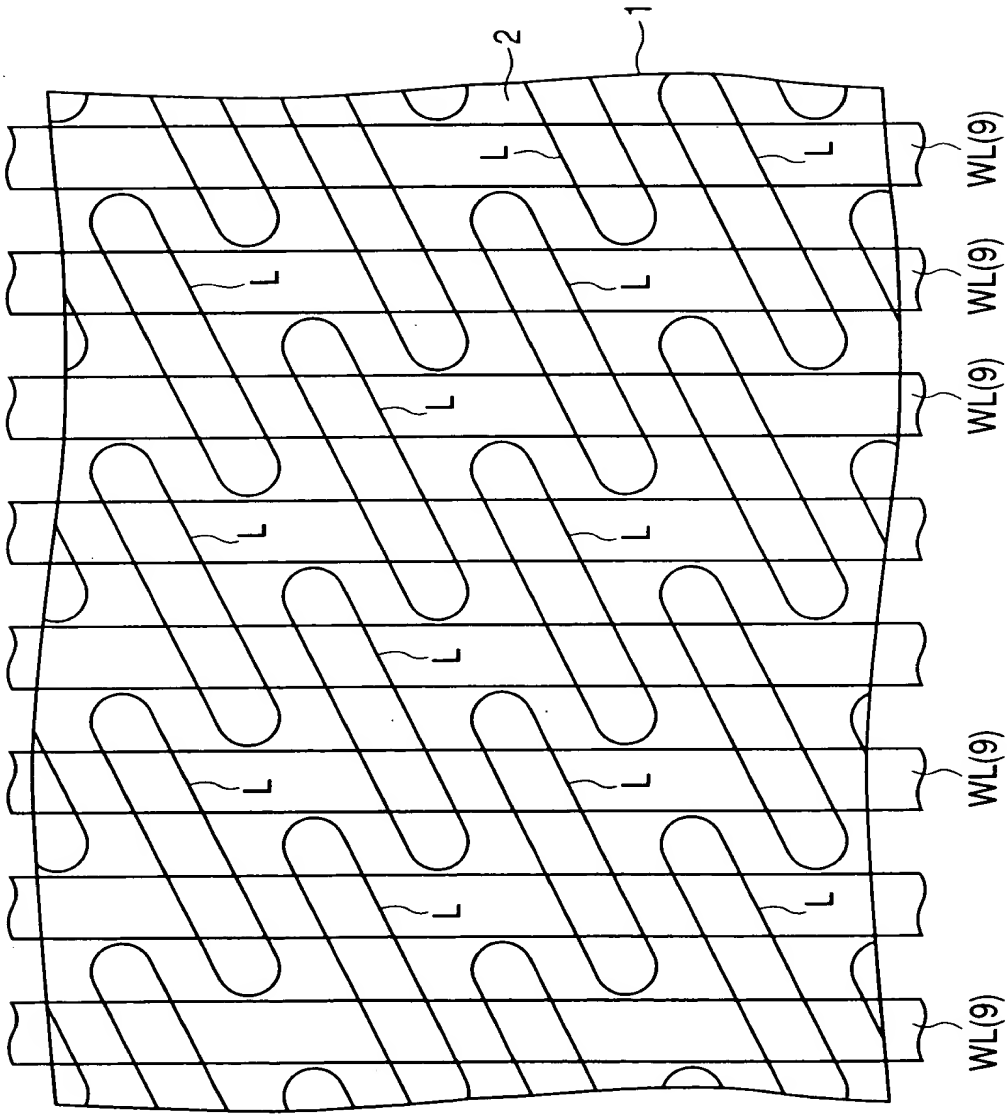


FIG. 21

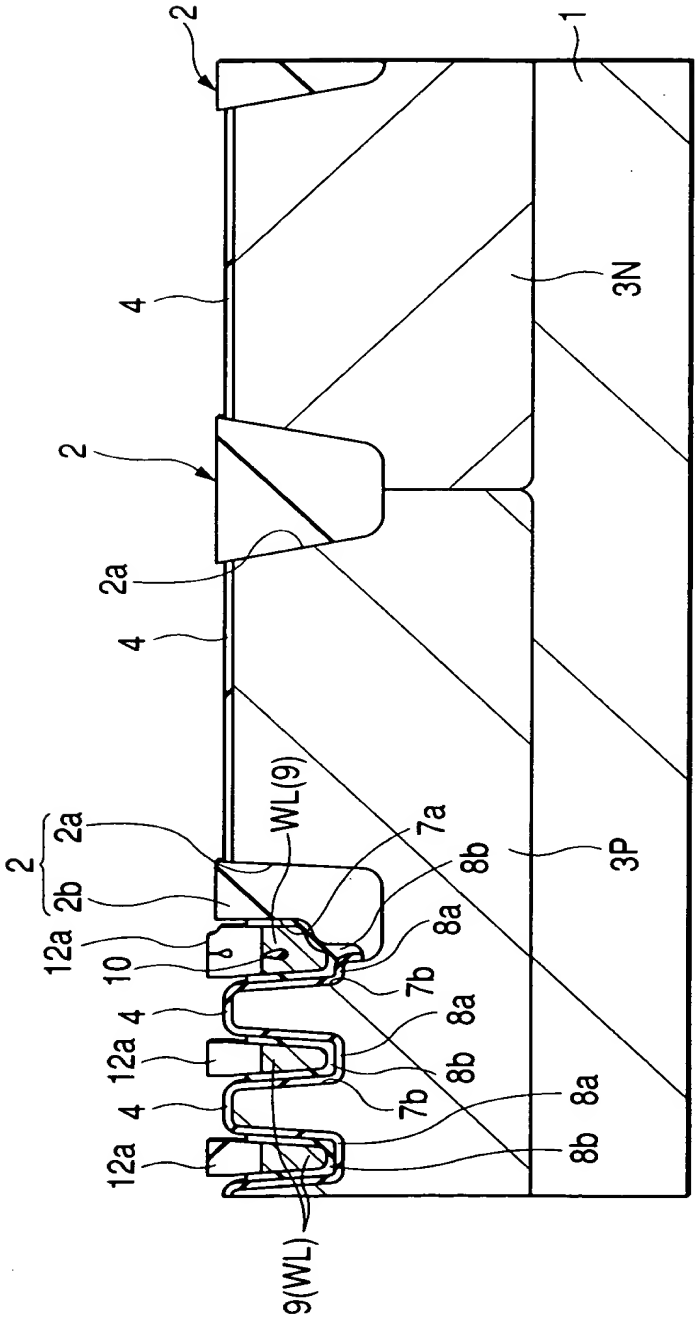

2
1
4
3N
2
2a
4
2
2a
2b
WL(9)
7a
8b
3P
12a
10
8a
7b
4
12a
8a
8b
7b
4
12a
8a
8b
9(WL)

FIG. 22

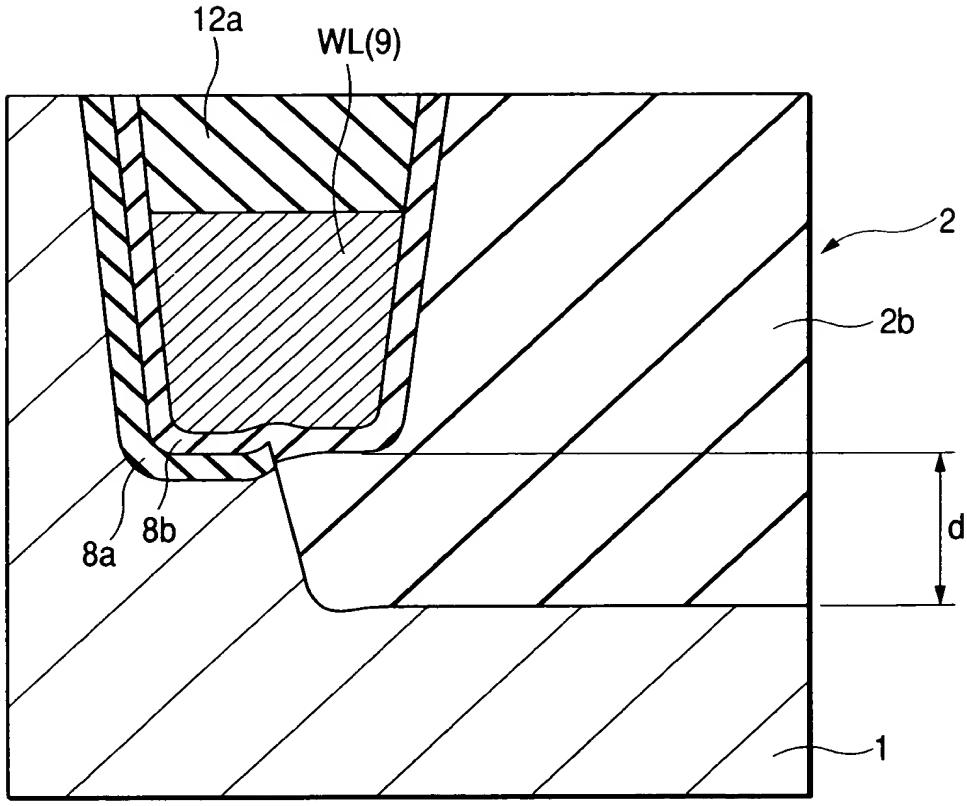


FIG. 23

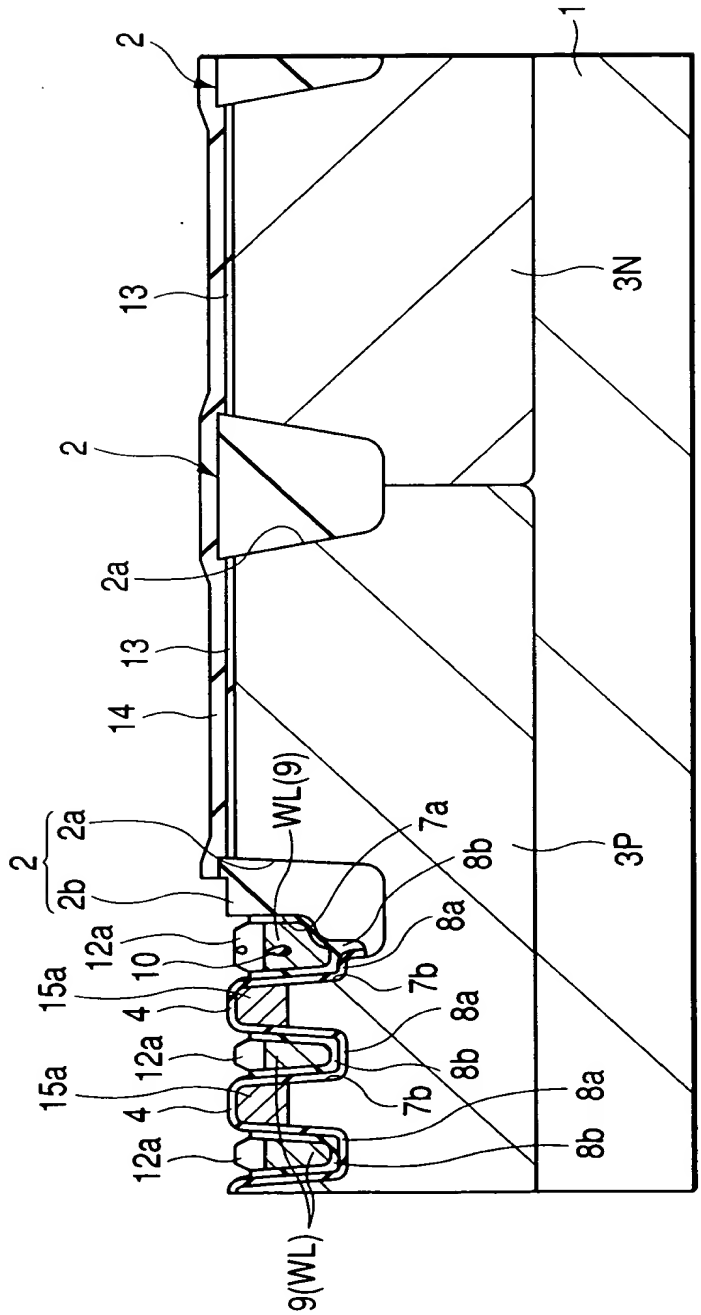

2
1
13
3N
2
2a
13
14
WL(9)
2
2a
2b
7a
8b
3P
12a
10
15a
4
12a
15a
4
12a
9(WL)
8a
7b
8a
8b
7b
8a
8b

FIG. 24

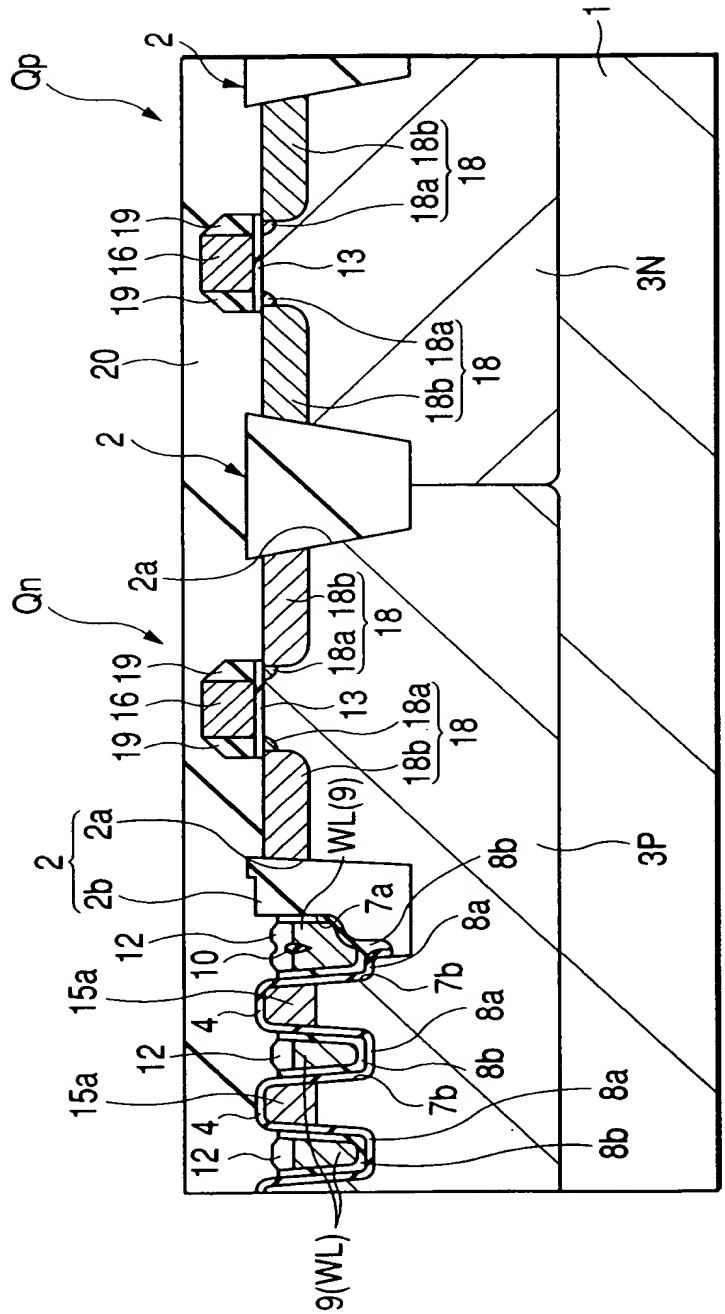

Qp
Qn
2
2a
2b
1
3N
3P
18a 18b
18
18b 18a
19
16
13
20
WL(9)
7a
7b
8a
8b
10
12
15a
4
9(WL)

FIG. 25

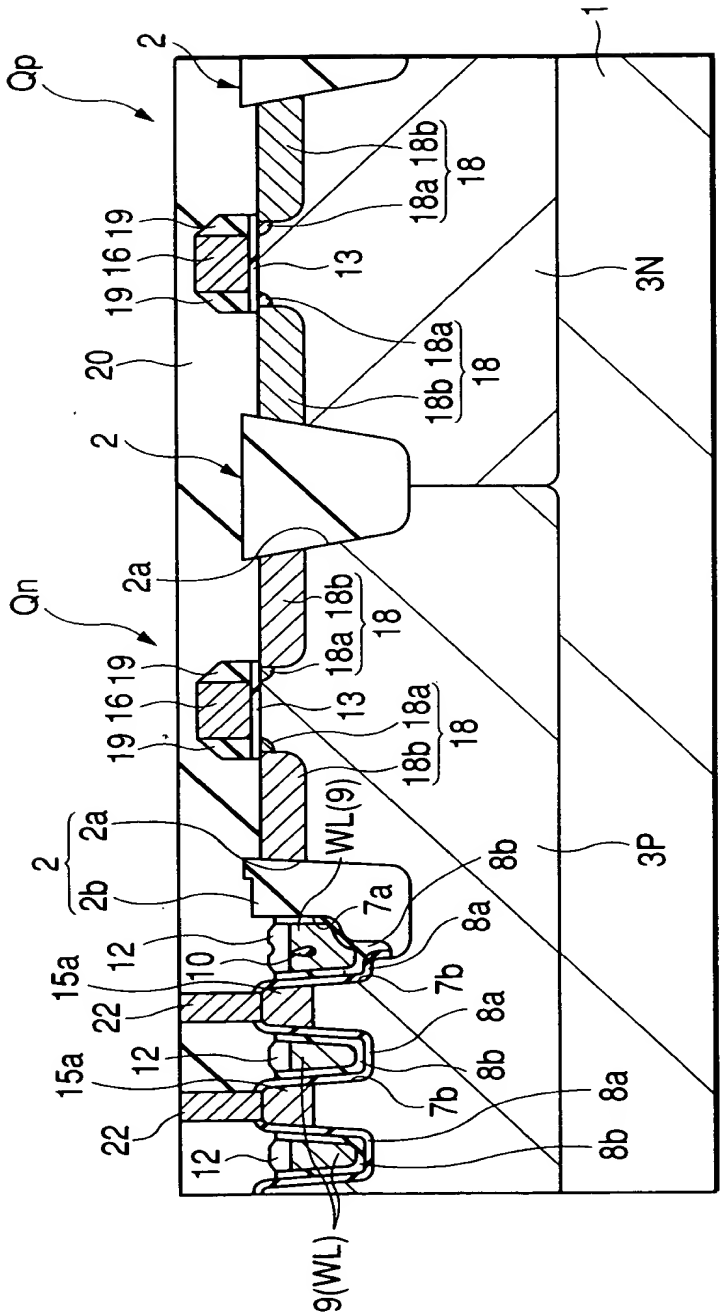

Qp
Qn
2
1
3N
3P
18
18a
18b
13
19
16
20
2a
2b
WL(9)
7a
7b
8a
8b
10
12
15a
22
9(WL)

FIG. 26

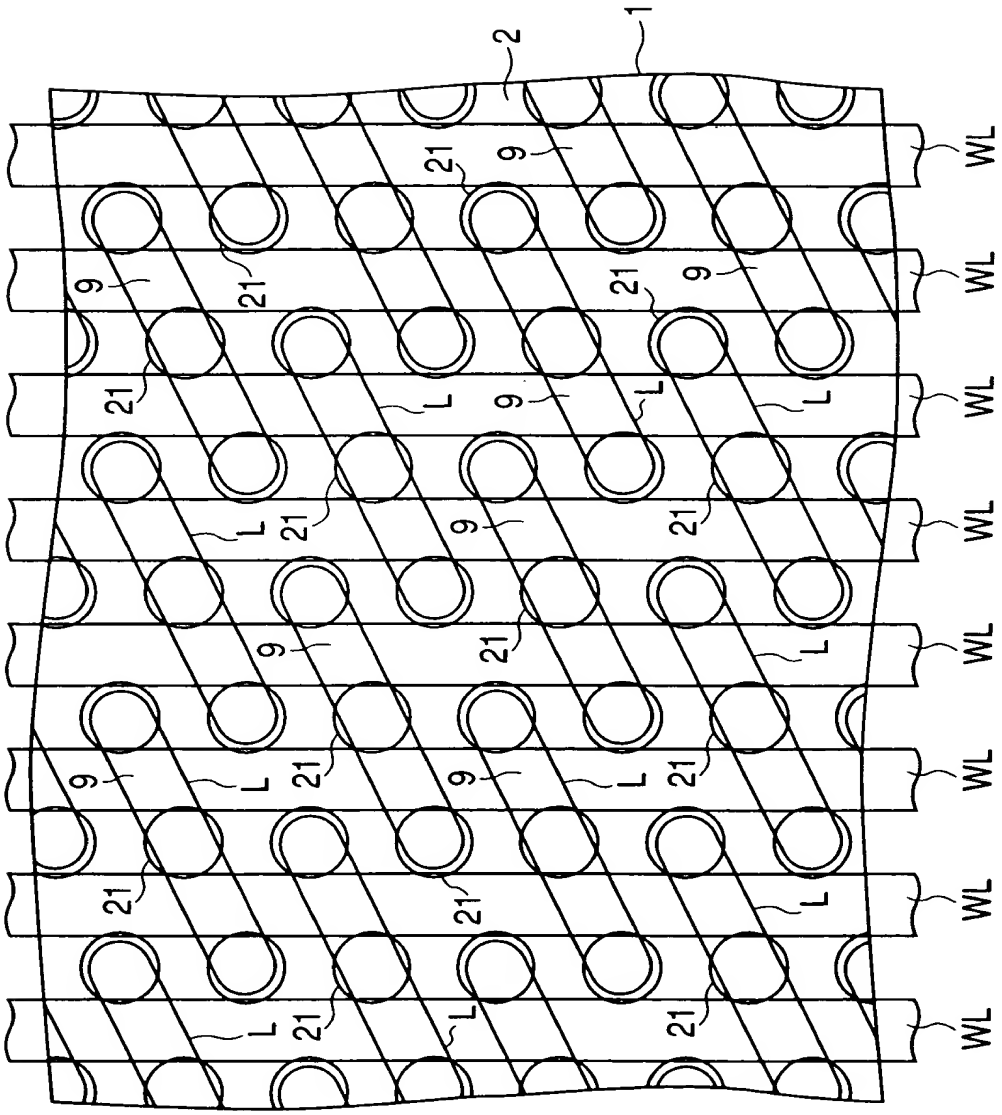


FIG. 27

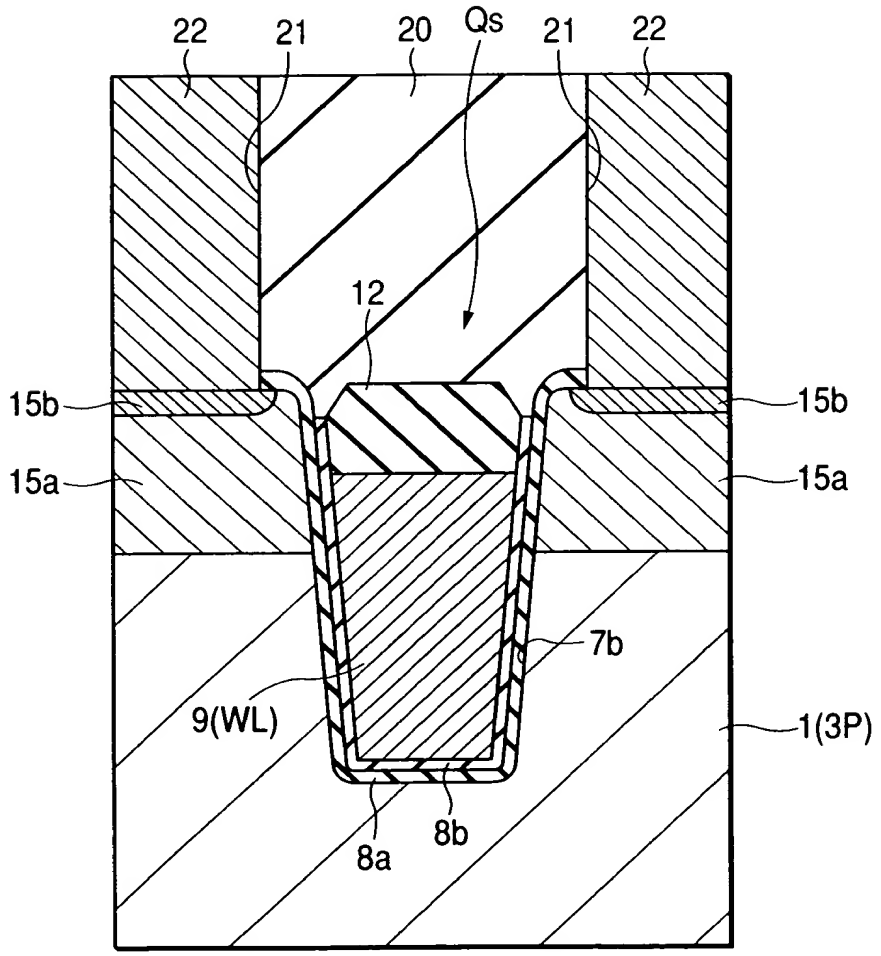


FIG. 28

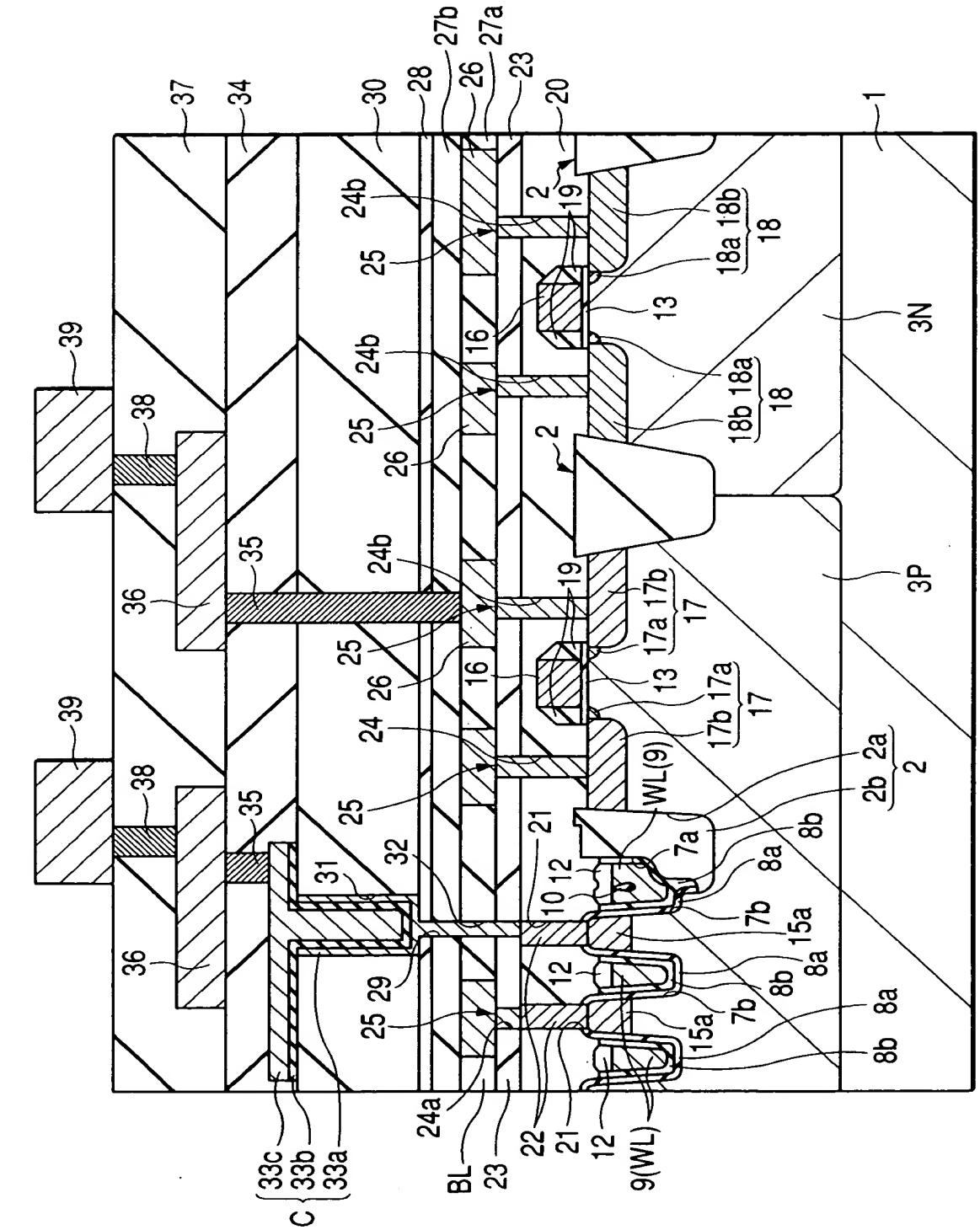

37
34
30
28
27b
27a
26
23
20
1
39
38
35
36
24b
25
26
24
16
2
19
18a 18b
18
13
3N
3P
17a 17b
17
17b 17a
17
WL(9)
2b 2a
2
21
32
31
12
10
7a
8b
8a
7b
15a
29
33c
33b
33a
C
24a
BL
23
22
21
12
9(WL)

FIG. 29

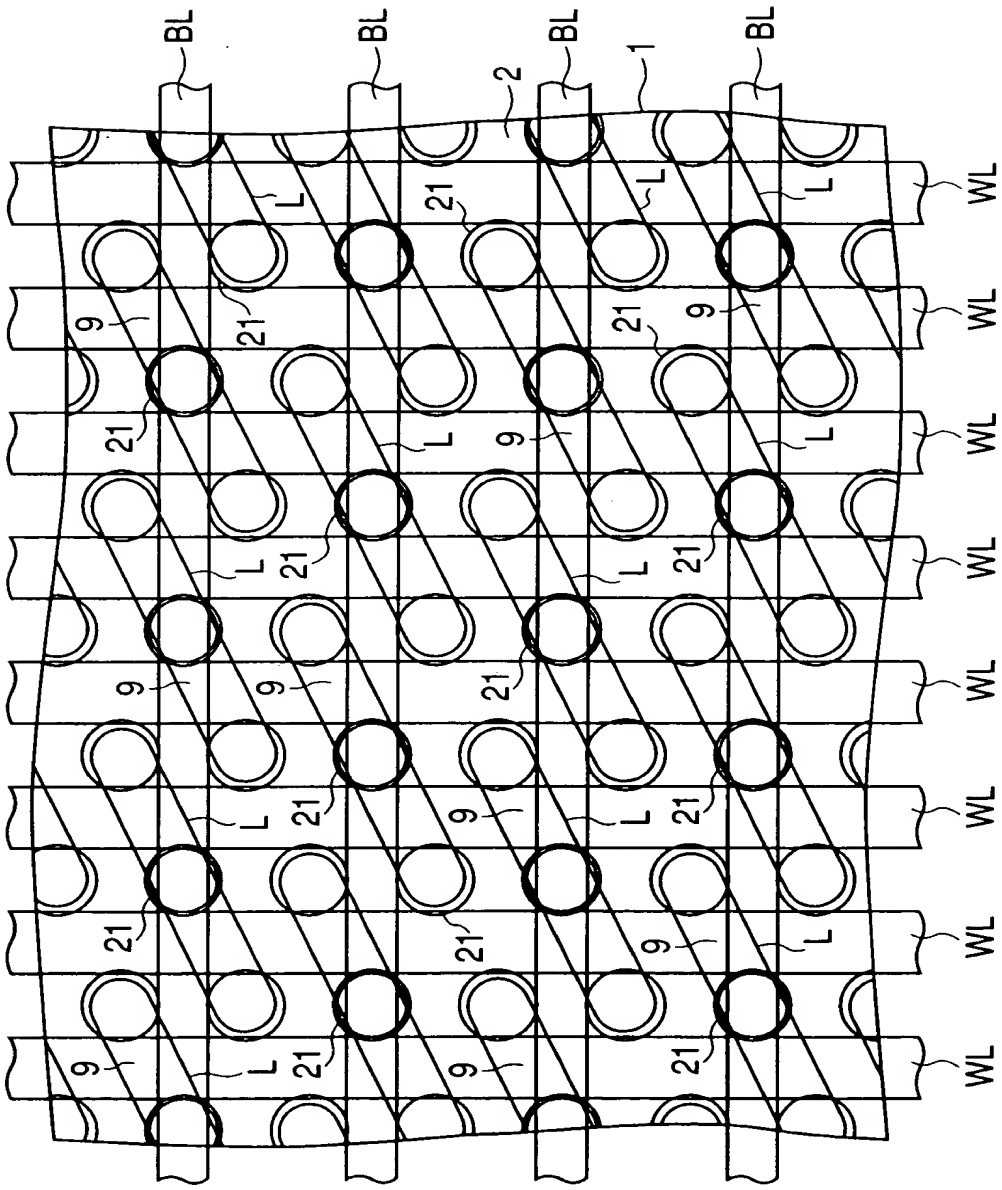


FIG. 30

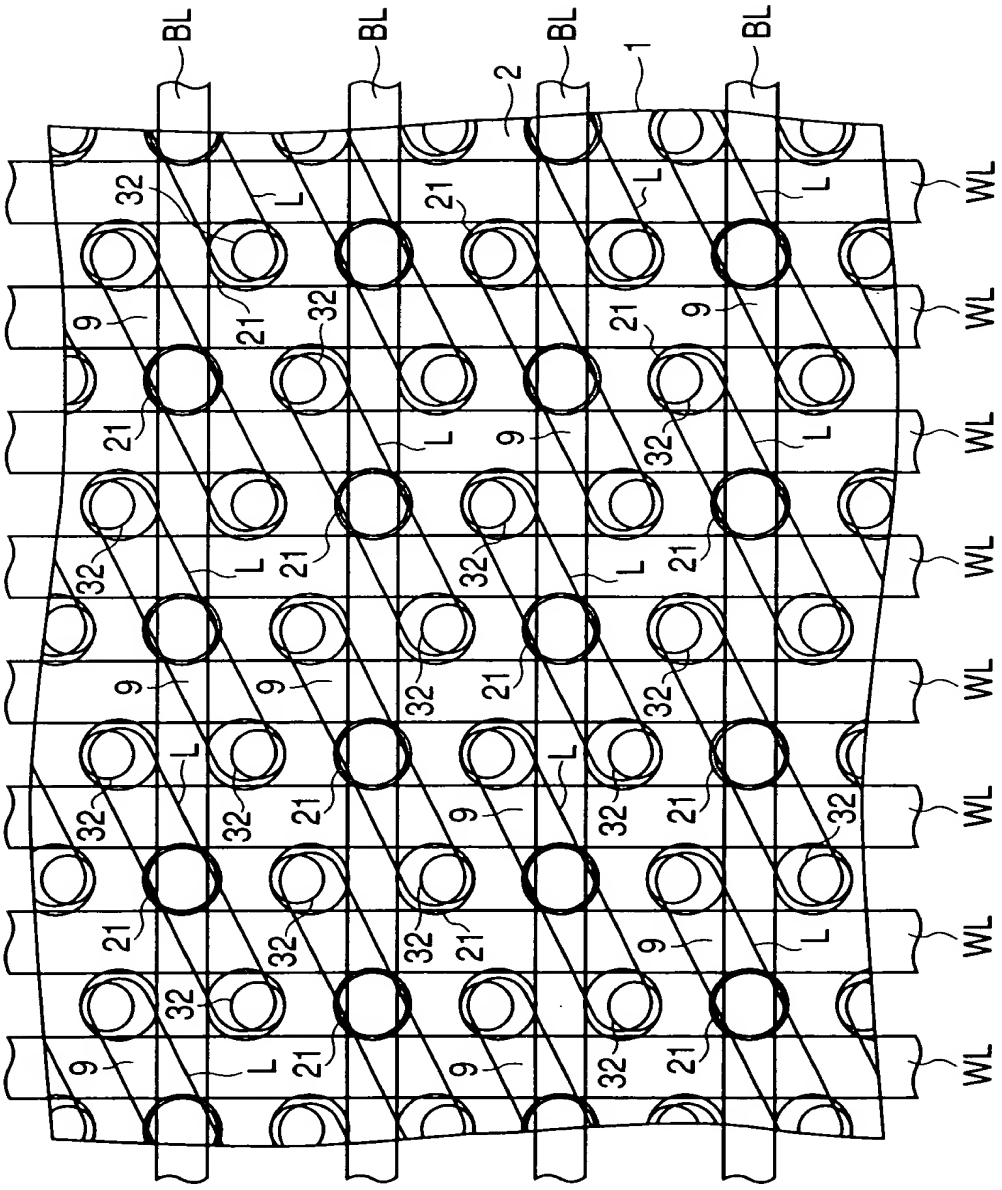


FIG. 31

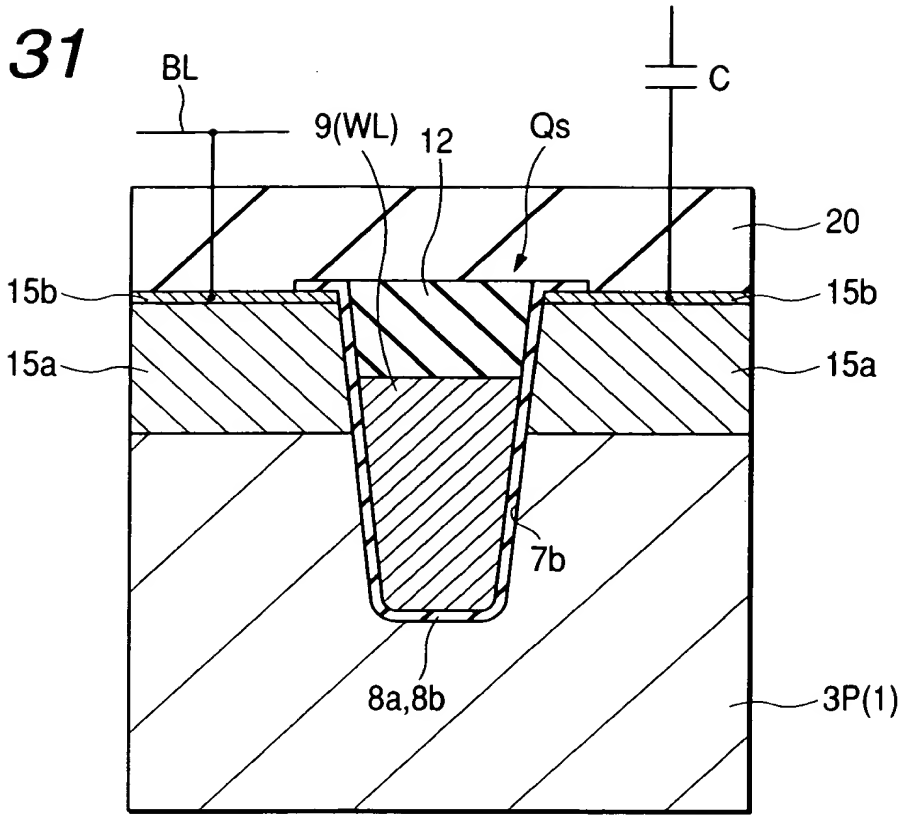

BL
C
9(WL)
12
Qs
20
15b
15b
15a
15a
7b
8a,8b
3P(1)

FIG. 32

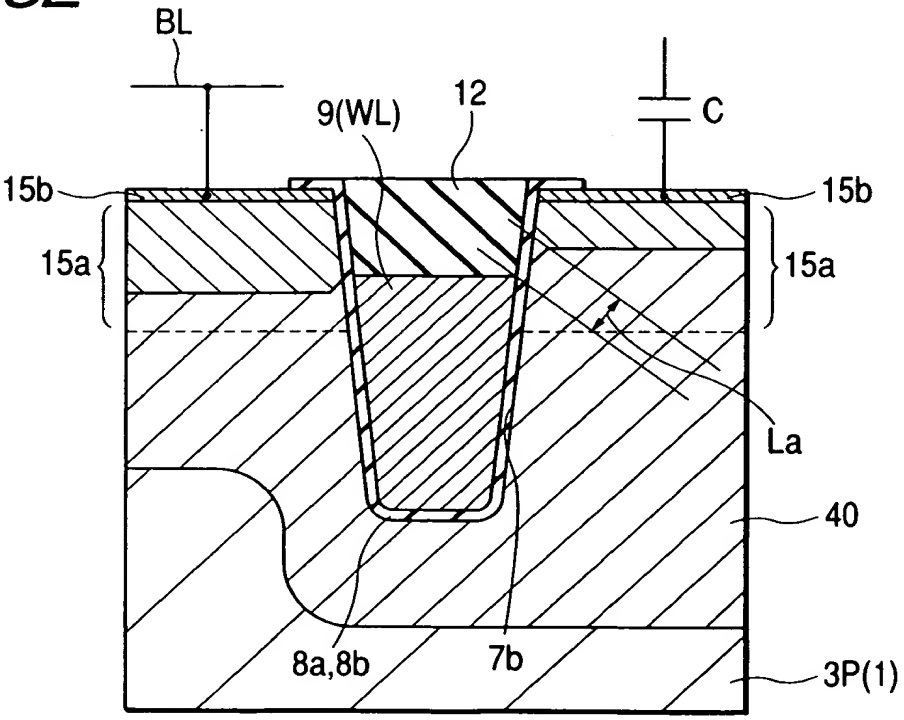

BL
9(WL)
12
C
15b
15b
15a
15a
La
40
8a,8b
7b
3P(1)

FIG. 33(a)

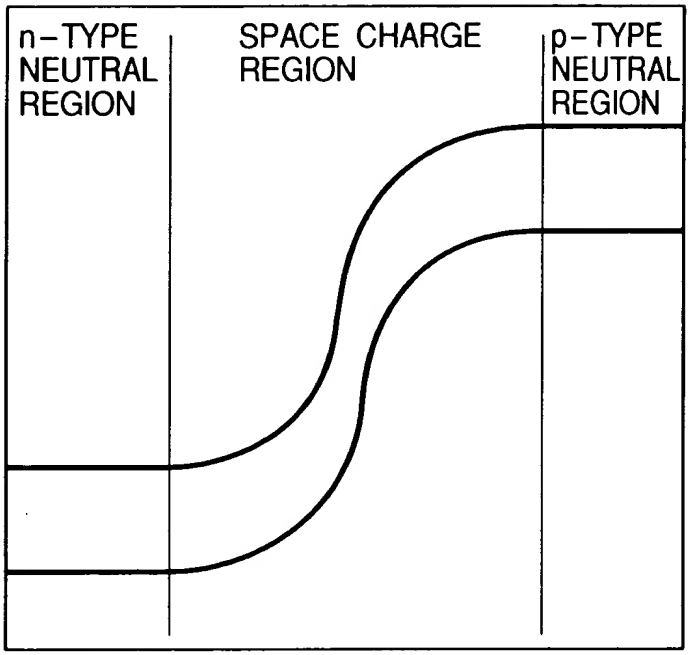


FIG. 33(b)

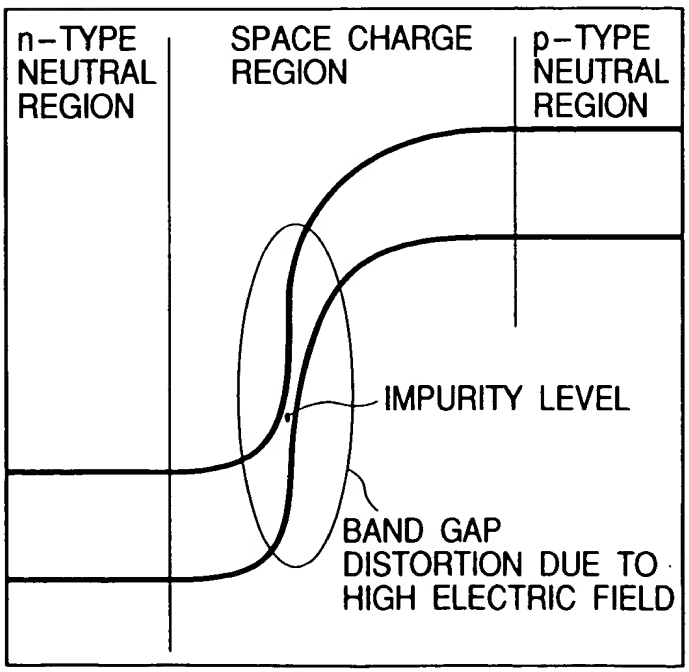


FIG. 34

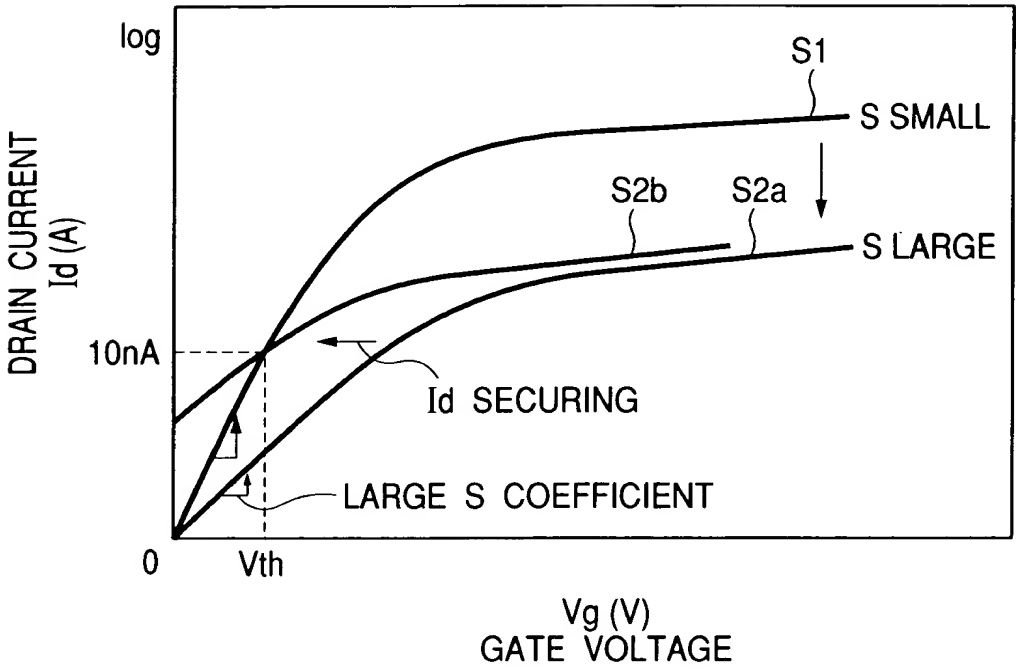

log
S1
S SMALL
S2b
S2a
S LARGE
DRAIN CURRENT
Id (A)
10nA
Id SECURING
LARGE S COEFFICIENT
0
Vth
Vg (V)
GATE VOLTAGE

FIG. 35

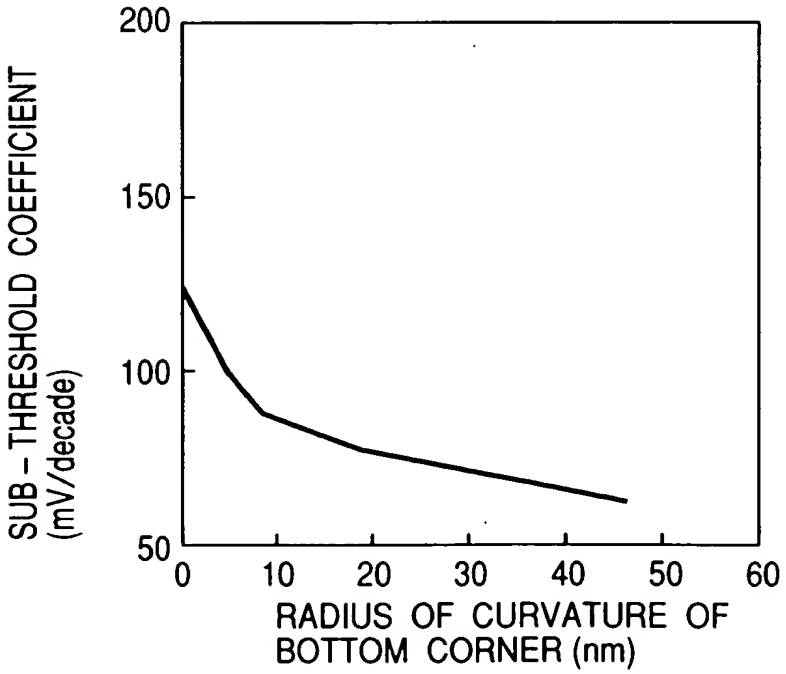

200
150
100
50
SUB-THRESHOLD COEFFICIENT
(mV/decade)
0
10
20
30
40
50
60
RADIUS OF CURVATURE OF
BOTTOM CORNER (nm)

FIG. 36

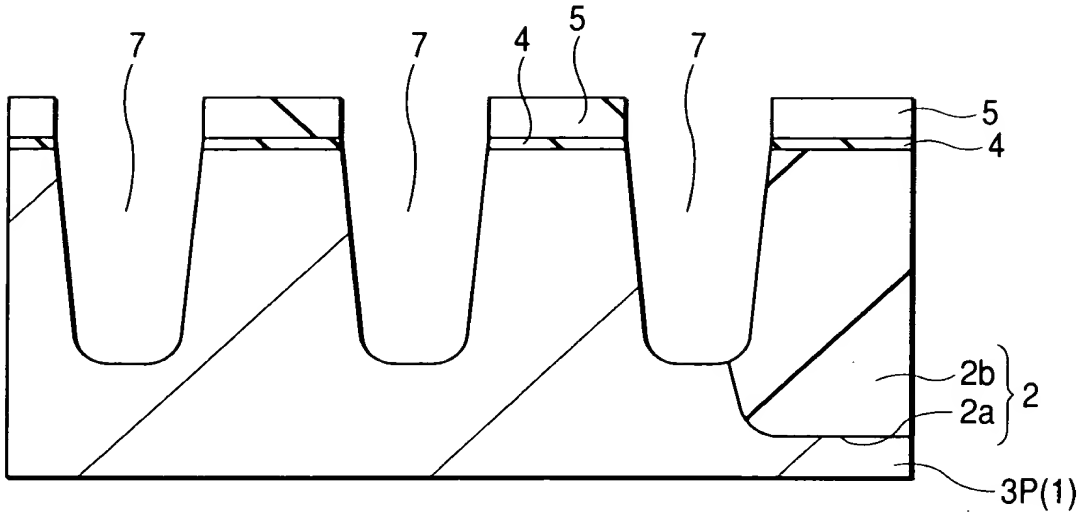


FIG. 37

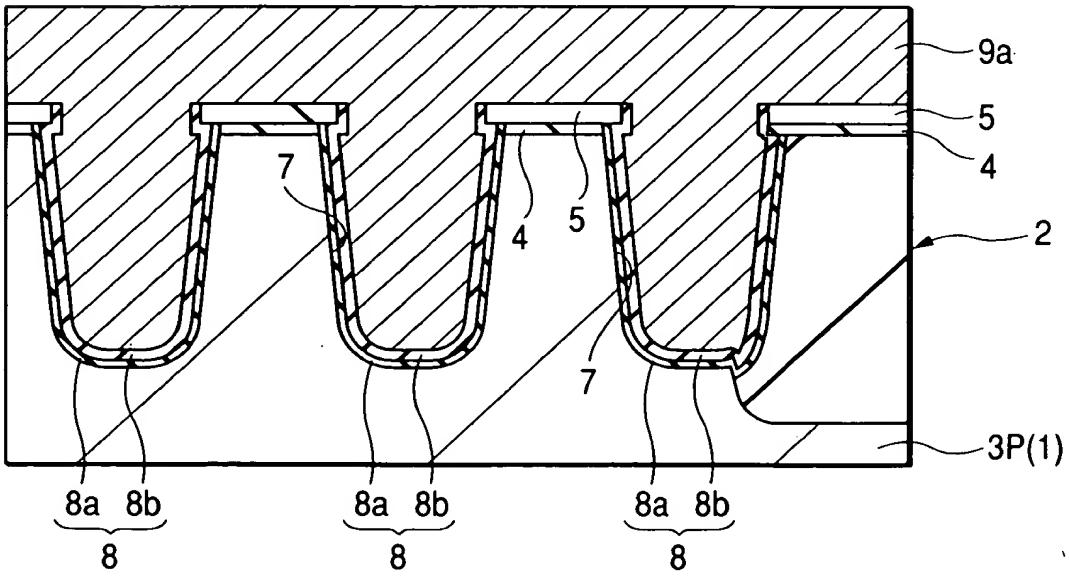


FIG. 38

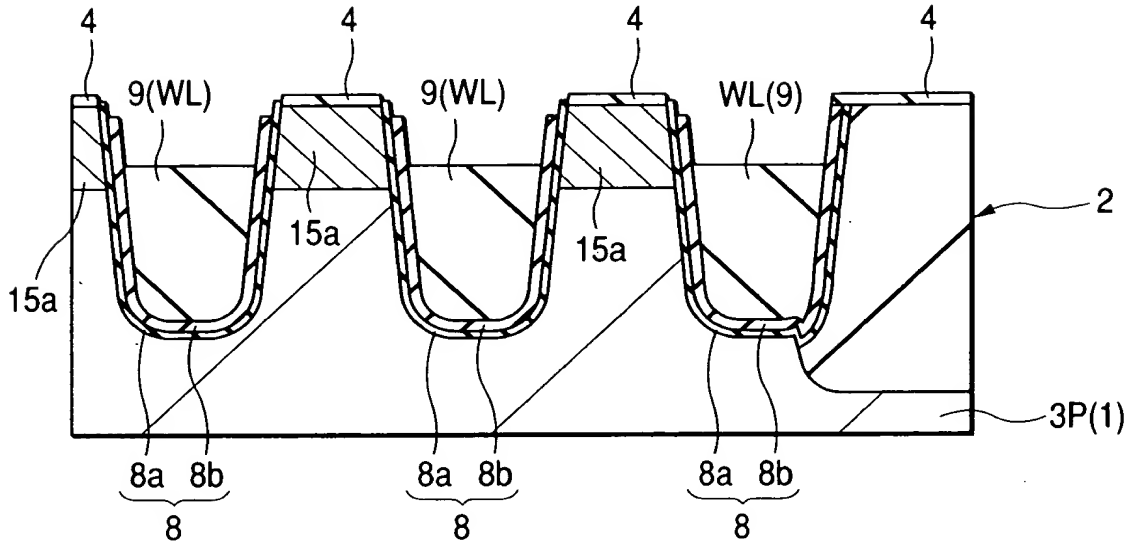

4
4
4
4
9(WL)
9(WL)
WL(9)
15a
15a
15a
2
3P(1)
8a 8b
8a 8b
8a 8b
8
8
8

FIG. 39

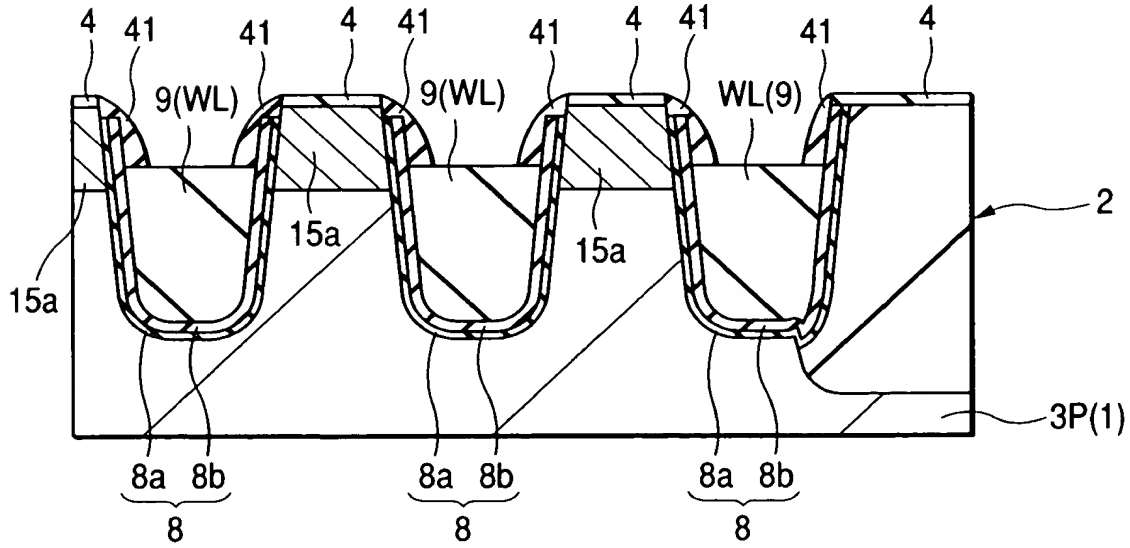

4
41
41
4
41
41
4
41
41
4
9(WL)
9(WL)
WL(9)
15a
15a
15a
2
3P(1)
8a 8b
8a 8b
8a 8b
8
8
8

FIG. 40

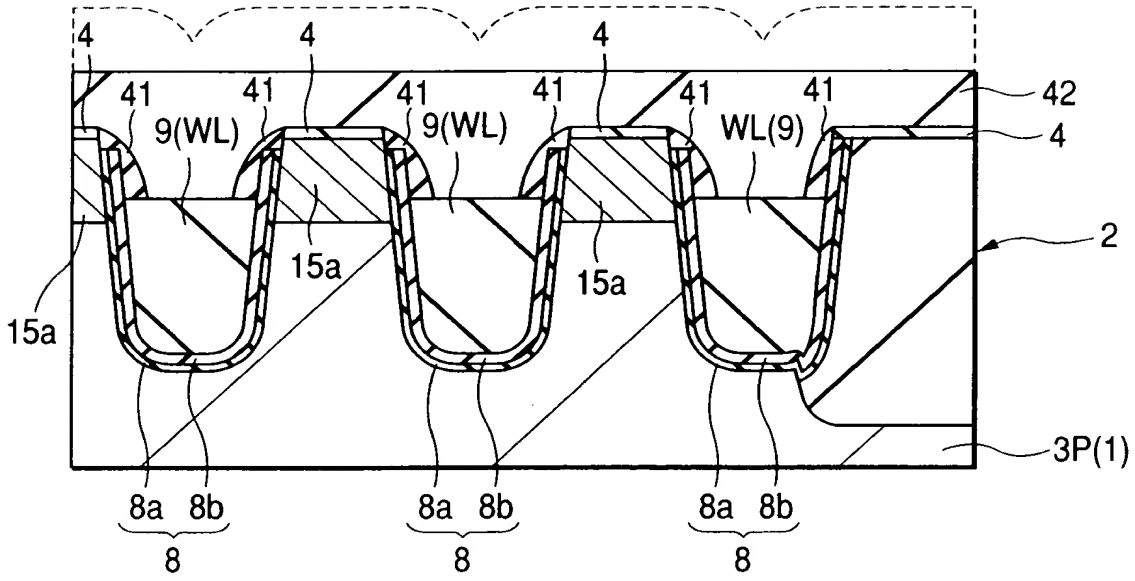

4
4
4
41
41
41
41
41
41
42
4
9(WL)
9(WL)
WL(9)
2
15a
15a
15a
3P(1)
8a
8b
8a
8b
8a
8b
8
8
8

FIG. 41

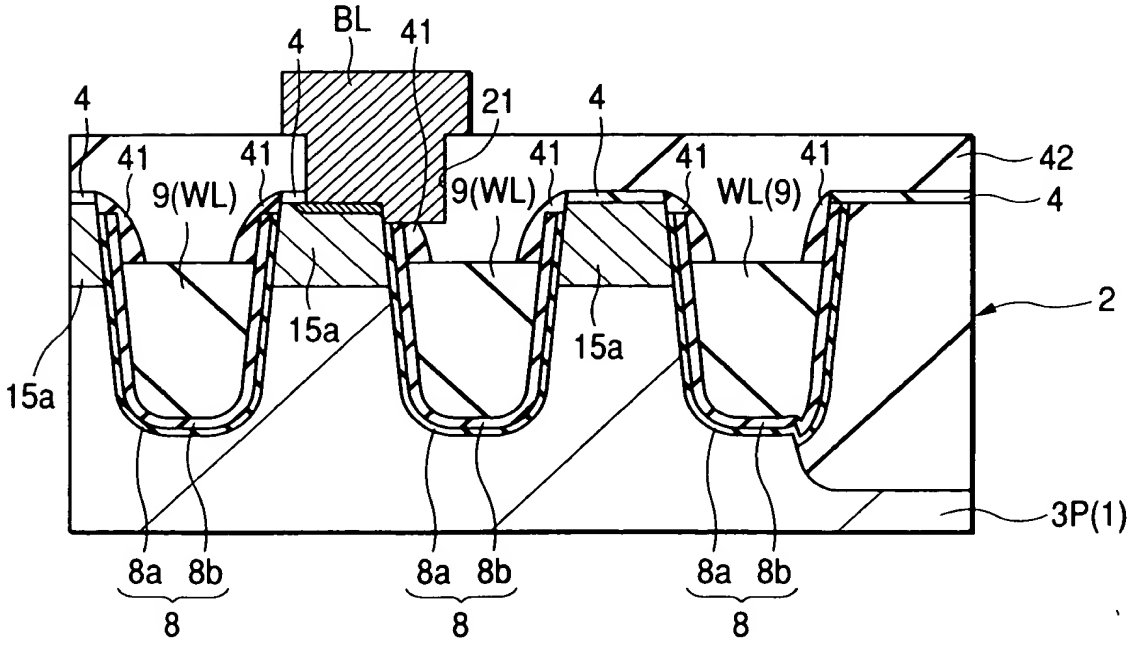

BL
4
41
4
21
4
41
41
41
41
41
42
4
9(WL)
9(WL)
WL(9)
2
15a
15a
15a
3P(1)
8a
8b
8a
8b
8a
8b
8
8
8

FIG. 42

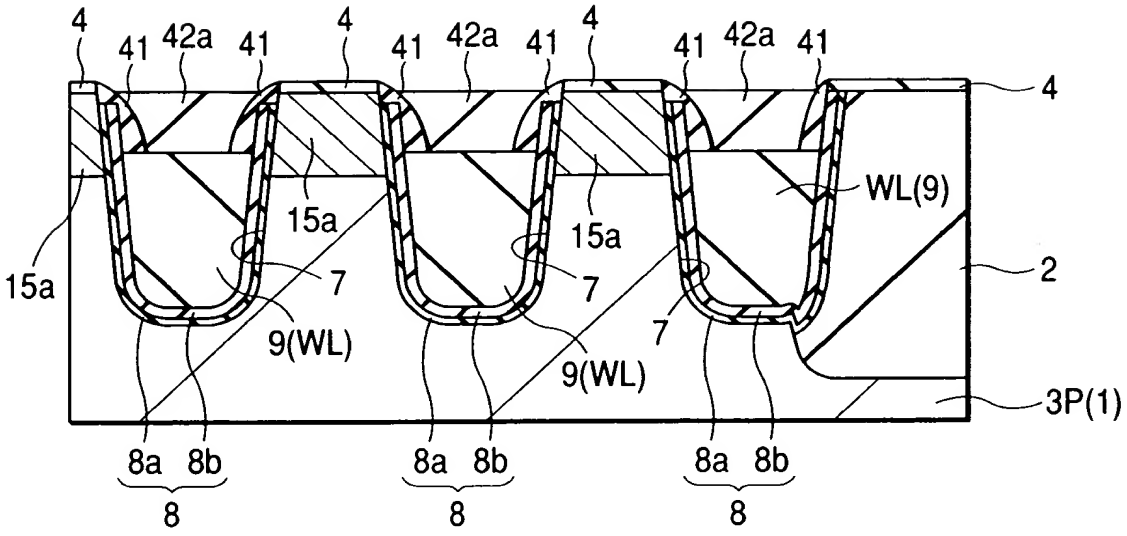

4
41
42a
41
4
41
42a
41
4
41
42a
41
4
WL(9)
15a
15a
15a
7
7
7
2
9(WL)
9(WL)
3P(1)
8a
8b
8a
8b
8a
8b
8
8
8

FIG. 43

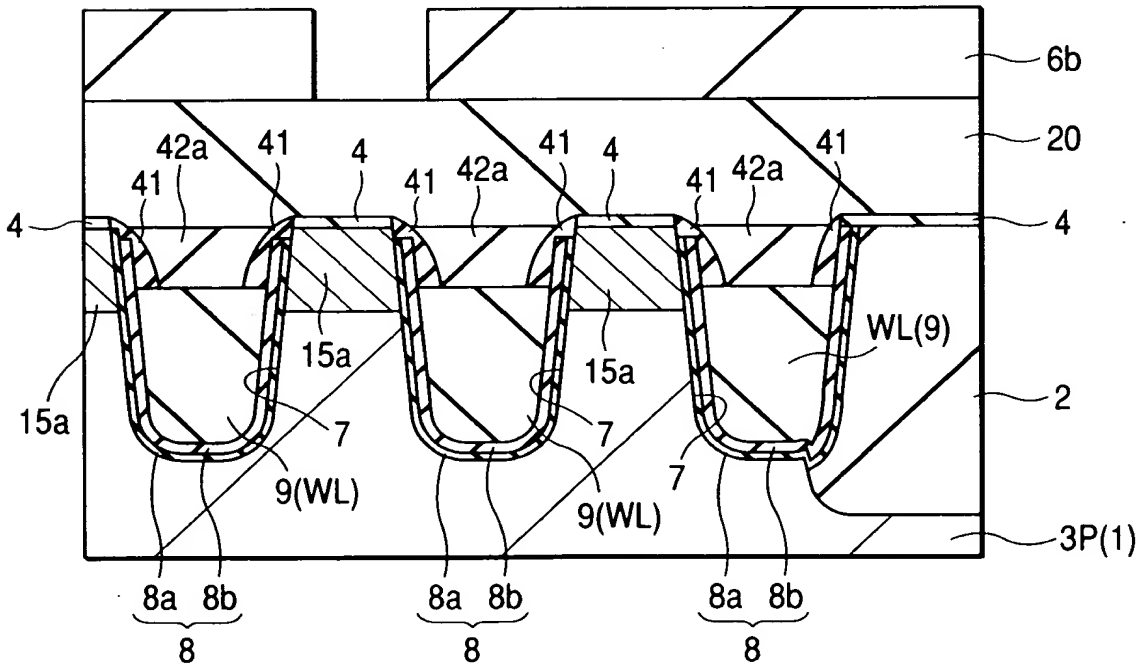

6b
20
4
41
42a
41
4
41
42a
41
4
41
42a
41
4
WL(9)
15a
15a
15a
7
7
7
2
9(WL)
9(WL)
3P(1)
8a
8b
8a
8b
8a
8b
8
8
8

FIG. 44

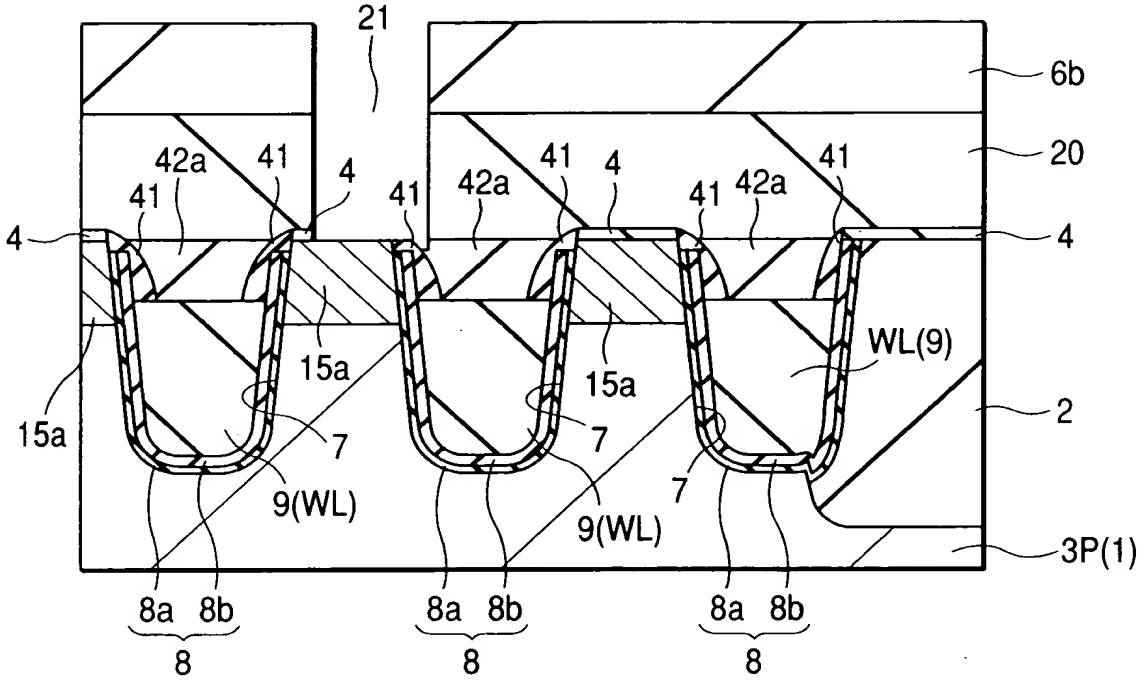

21
6b
20
42a
41
4
15a
7
9(WL)
WL(9)
2
3P(1)
8a
8b
8

FIG. 45

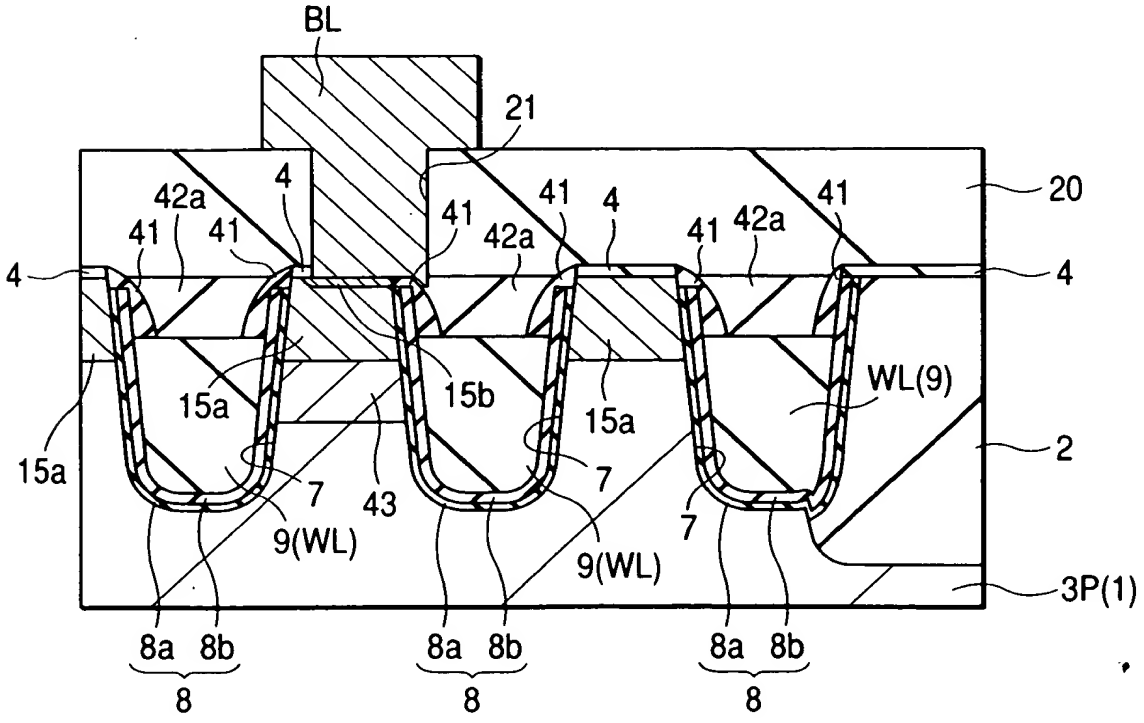

BL
21
20
42a
41
4
15a
15b
7
43
9(WL)
WL(9)
2
3P(1)
8a
8b
8

FIG. 46

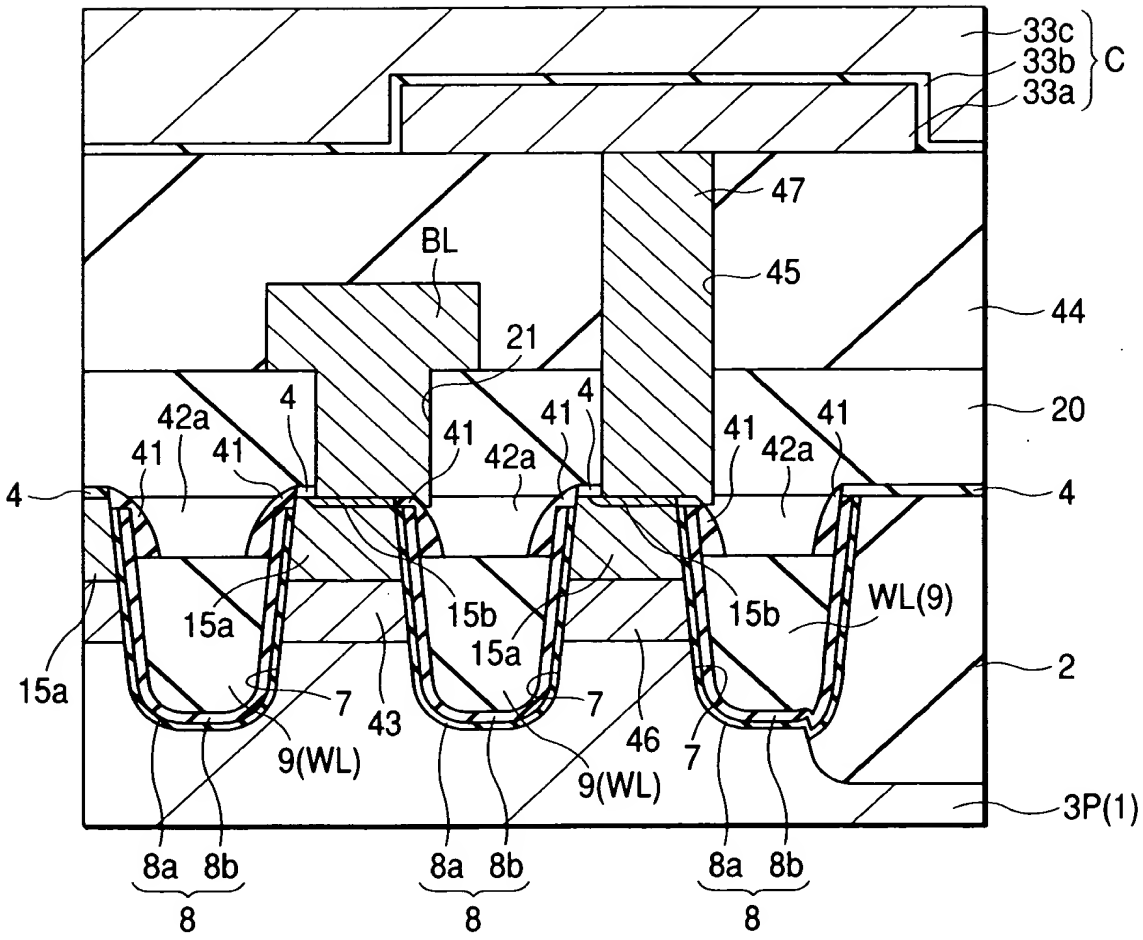

33c
33b
C
33a
47
BL
45
44
21
20
4
42a
41
41
42a
41
4
4
41
42a
41
4
4
15a
15b
15a
15b
WL(9)
15a
2
7
43
7
46
7
9(WL)
9(WL)
3P(1)
8a
8b
8a
8b
8a
8b
8
8
8

FIG. 47

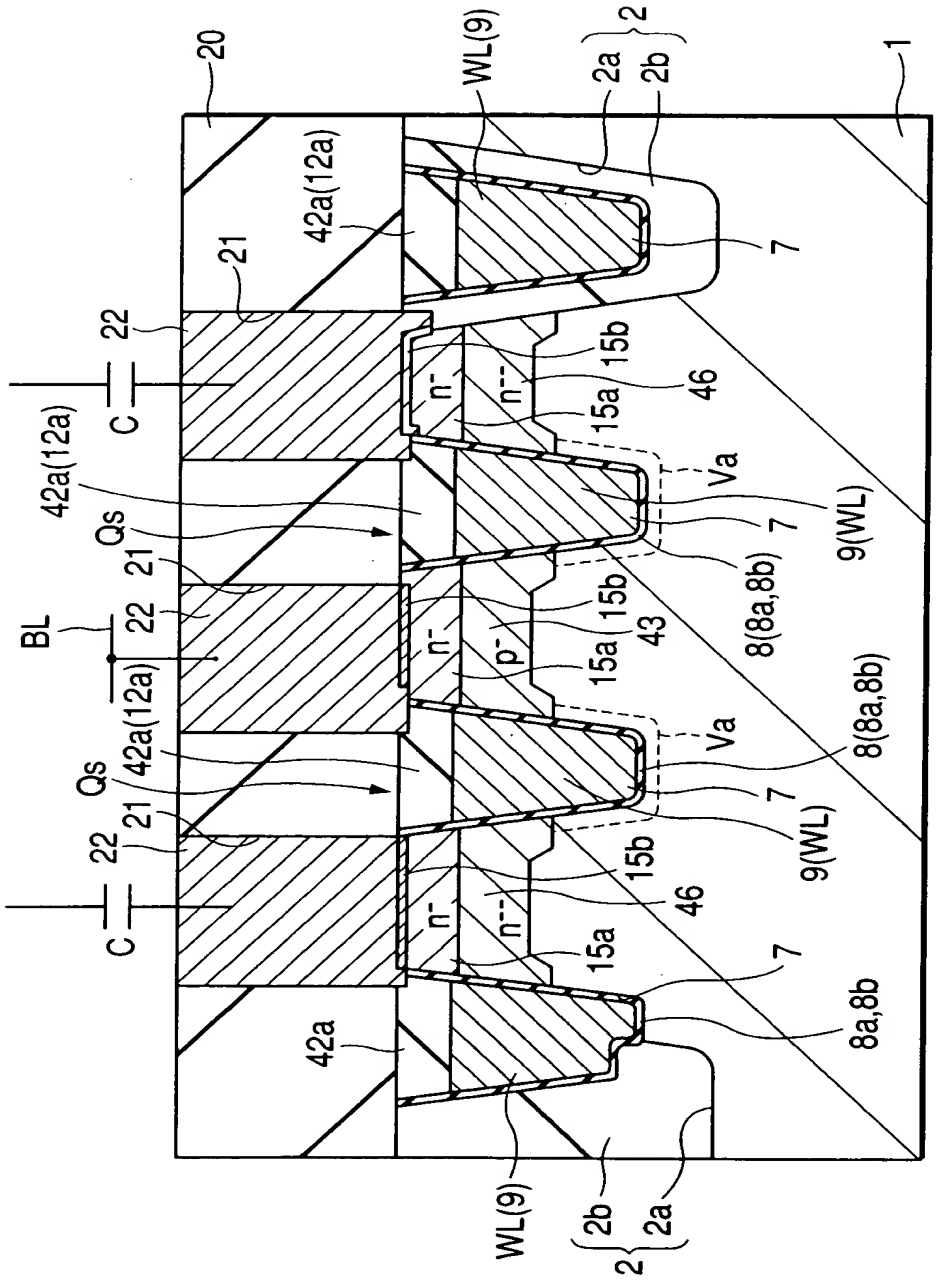
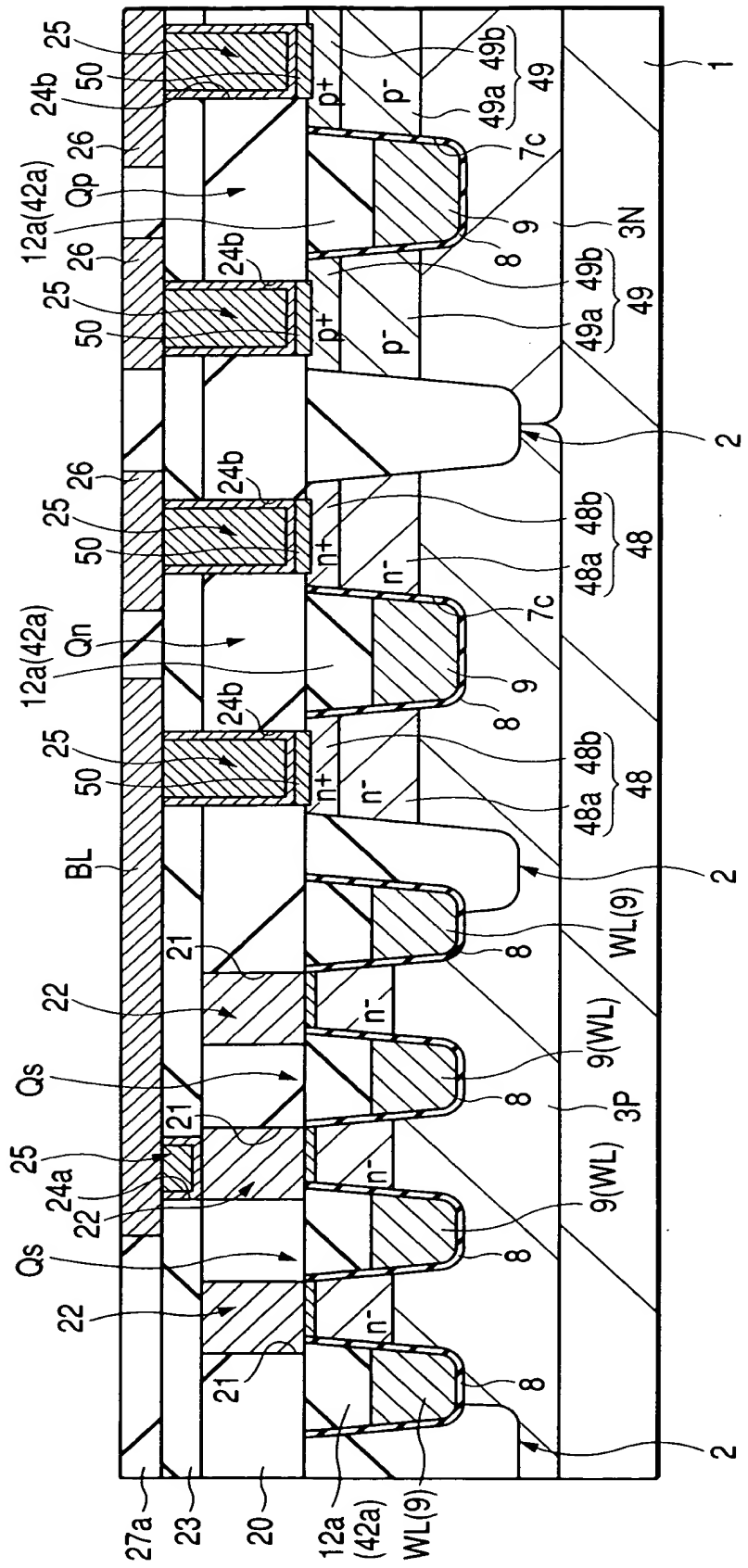

20
WL(9)
2
2a
2b
1
42a(12a)
21
22
C
7
n-
n--
15a
15b
46
Va
9(WL)
Qs
BL
43
p-
8(8a,8b)
42a
8a,8b

FIG. 48


1
2
3N
3P
7c
8
9
9(WL)
WL(9)
12a(42a)
20
21
22
23
24a
24b
25
26
27a
48
48a
48b
49
49a
49b
50
BL
Qn
Qp
Qs
n+
n-
p+
p-